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Volume XXVII

JANUARY 1961

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Published Quarterly at Chapel Hill, N. C.

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The Southern Economic Journal is published four times a year, in January, April, July, and October, at Chapel Hill, N. C. The subscription price is \$6.00 per year, \$1.50 for single copies.

All communications should be addressed to G. T. Schwenning, Managing Editor, The Southern Economic Journal, P. O. Box 1289, Chapel Hill, N. C.

Microfilm editions of this Journal are available to regular subscribers only and may be obtained at the completion of the volume by writing to University Microfilms, 313 North First Street, Ann Arbor, Michigan.

The articles in this Journal are indexed in *The International Index to Periodicals* and *Public Affairs Information Service*.

The Southern Economic Association and the University of North Carolina, joint publishers of this Journal, assume no responsibility for statements made by contributors.

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Fred Marshall

THIRTY-FIRST PRESIDENT OF THE SOUTHERN ECONOMIC ASSOCIATION, 1959-1960

The SOUTHERN ECONOMIC JOURNAL

VOLUME XXVII

January 1961

NUMBER 3

ARE THE SOCIAL SCIENCES REALLY INFERIOR?*

FRITZ MACHLUP

The Johns Hopkins University and Princeton University

If we ask whether the "social sciences" are "really inferior," let us first make sure that we understand each part of the question.

"Inferior" to what? Of course to the natural sciences. "Inferior" in what respect? It will be our main task to examine all the "respects," all the scores on which such inferiority has been alleged. I shall enumerate them presently.

The adverb "really" which qualifies the adjective "inferior" refers to allegations made by some scientists, scholars, and laymen. But it refers also to the "inferiority complex" which I have noted among many social scientists. A few years ago I wrote an essay entitled "The Inferiority Complex of the Social Sciences."¹ In that essay I said that "an inferiority complex may or may not be justified by some 'objective' standards," and I went on to discuss the consequences which "the feeling of inferiority"—conscious or subconscious—has for the behavior of the social scientists who are suffering from it. I did not then discuss whether the complex has an objective basis, that is, whether the social sciences are "really" inferior. This is our question to-day.

The subject noun would call for a long disquisition. What is meant by "social sciences," what is included, what is not included? Are they the same as what others have referred to as the "moral sciences," the "Geisteswissenschaften," the "cultural sciences," the "behavioral sciences"? Is Geography, or the part of it that is called "Human Geography," a social science? Is History a social science—or perhaps even the social science *par excellence*, as some philosophers have contended? We shall not spend time on this business of defining and classifying. A few remarks may later be necessary in connection with some

points of methodology, but by and large we shall not bother here with a definition of "social sciences" and with drawing boundary lines around them.

THE GROUNDS OF COMPARISON

The social sciences and the natural sciences are compared and contrasted on many scores, and the discussions are often quite unsystematic. If we try to review them systematically, we shall encounter a good deal of overlap and unavoidable duplication. None the less, it will help if we enumerate in advance some of the grounds of comparison most often mentioned, grounds on which the social sciences are judged to come out "second best":

1. Invariability of observations
2. Objectivity of observations and explanations
3. Verifiability of hypotheses
4. Exactness of findings
5. Measurability of phenomena
6. Constancy of numerical relationships
7. Predictability of future events
8. Distance from every-day experience
9. Standards of admission and requirements

We shall examine all these comparisons.

INVARIABILITY OF OBSERVATIONS

The idea is that you cannot have much of a science unless things recur, unless phenomena repeat themselves. In nature we find many factors and conditions "invariant." Do we in society? Are not conditions in society changing all the time, and so fast that most events are unique, each quite different from anything that has happened before? Or can one rely on the saying that "history repeats itself" with sufficient invariance to permit generalizations about social events?

There is a great deal of truth, and important truth, in this comparison. Some philosophers were so impressed with the invariance of nature and the variability of social phenomena that they used this difference as the criterion in the defini-

* Presidential Address delivered at the thirtieth annual conference of the Southern Economic Association, Atlanta, Georgia, on November 18, 1960.

¹ Published in *On Freedom and Free Enterprise: Essays in Honor of Ludwig von Mises*, Mary Sennholz, ed. (Princeton: Van Nostrand, 1956), pp. 161-172.

tions of natural and cultural sciences. Following Windelband's distinction between generalizing ("nomothetic") and individualizing ("ideographic") propositions, the German philosopher Heinrich Rickert distinguished between the generalizing sciences of nature and the individualizing sciences of cultural phenomena; and by individualizing sciences he meant historical sciences.² In order to be right, he redefined both "nature" and "history" by stating that reality is "nature" if we deal with it in terms of the *general* but becomes "history" if we deal with it in terms of the *unique*. To him, geology was largely history, and economics, most similar to physics, was a natural science. This implies a rejection of the contention that all fields which are normally called social sciences suffer from a lack of invariance; indeed, economics is here considered so much a matter of immutable laws of nature that it is handed over to the natural sciences.

This is not satisfactory, nor does it dispose of the main issue that natural phenomena provide *more* invariance than social phenomena. The main difference lies probably in the number of factors that must be taken into account in explanations and predictions of natural and social events. Only a small number of reproducible facts will normally be involved in a physical explanation or prediction. A much larger number of facts, some of them probably unique historical events, will be found relevant in an explanation or prediction of economic or other social events. This is true, and methodological devices will not do away with the difference. But it is, of course, only a difference in degree.

The physicist Robert Oppenheimer once raised the question whether, if the universe is a *unique* phenomenon, we may assume that *universal* or *general* propositions can be formulated about it. Economists of the Historical School insisted on treating each "stage" or phase of economic society as a completely unique one, not permitting the formulation of universal propositions. Yet, in the physical world, phenomena are not quite so homogeneous as many have liked to think; and in the social world, phenomena are not quite so heterogeneous as many have been afraid they are. (If they were, we could not even have generalized concepts of social events and words naming

them.) In any case, where reality seems to show a bewildering number of variations, we construct an ideal world of abstract models in which we create enough homogeneity to permit us to apply reason and deduce the implied consequences of assumed constellations. This artificial homogenization of types of phenomena is carried out in natural and social sciences alike.

There is thus no difference in invariance in the sequences of events in nature and in society as long as we theorize about them—because in the abstract models homogeneity is assumed. There is only a difference of degree in the variability of phenomena of nature and society if we talk about the real world—as long as heterogeneity is not reduced by means of deliberate "controls." There is a third world, between the abstract world of theory and the real unmanipulated world, namely, the artificial world of the experimental laboratory. In this world there is less variability than in the real world and more than in the model world. But this third world does not exist in most of the social sciences (nor in all natural sciences). We shall see later that the mistake is often made of comparing the artificial laboratory world of manipulated nature with the real world of unmanipulated society.

We conclude on this point of comparative invariance, that there is indeed a difference between natural and social sciences, and that the difference—apart from the possibility of laboratory experiments—lies chiefly in the number of relevant factors, and hence of possible combinations, to be taken into account for explaining or predicting events occurring in the real world.

OBJECTIVITY OF OBSERVATIONS AND EXPLANATIONS

The idea behind a comparison between the "objectivity" of observations and explorations in the natural and social sciences may be conveyed by an imaginary quotation: "Science must be objective and not affected by value judgments; but the social sciences are inherently concerned with values and, hence, they lack the disinterested objectivity of science." True? Frightfully muddled. The trouble is that the problem of "subjective value," which is at the very root of the social sciences, is quite delicate and has in fact confused many, including some fine scholars.

To remove confusion one must separate the different meanings of "value" and the different ways

² Heinrich Rickert. *Die Grenzen der naturwissenschaftlichen Begriffsbildung* (Tübingen: Mohr-Siebeck, 1902).

in which they relate to the social sciences, particularly economics. I have distinguished eleven different kinds of value-reference in economics, but have enough sense to spare you this exhibition of my pedagogic dissecting zeal. But we cannot dispense entirely with the problem and overlook the danger of confusion. Thus, I offer you a bargain and shall reduce my distinctions from eleven to four. I am asking you to keep apart the following four meanings in which value judgment may come into our present discussion: (a) The analyst's judgment may be biased for one reason or another, perhaps because his views of the social "Good" or his personal pecuniary interests in the practical use of his findings interfere with the proper scientific detachment. (b) Some normative issues may be connected with the problem under investigation, perhaps ethical judgments which may color some of the investigator's incidental pronouncements—obiter dicta—without however causing a bias in his reported findings of his research. (c) The interest in solving the problems under investigation is surely affected by values since, after all, the investigator selects his problems because he believes that their solution would be of value. (d) The investigator in the social sciences has to explain his observations as results of human actions which can be interpreted only with reference to motives and purposes of the actors, that is, to values entertained by them.

With regard to the first of these possibilities, some authorities have held that the social sciences may more easily succumb to temptation and may show obvious biases. The philosopher Morris Cohen, for example, spoke of "the subjective difficulty of maintaining scientific detachment in the study of human affairs. Few human beings can calmly and with equal fairness consider both sides of a question such as socialism, free love, or birth-control."³ This is quite true, but one should not forget similar difficulties in the natural sciences. Remember the difficulties which, in deference to religious values, biologists had in discussions of evolution and, going further back, the troubles of astronomers in discussions of the heliocentric theory and of geologists in discussions of the age of the earth. Let us also recall that only 25 years ago, German mathematicians and physi-

cists rejected "Jewish" theorems and theories, including physical relativity, under the pressure of nationalistic values, and only ten years ago Russian biologists stuck to a mutation theory which was evidently affected by political values. I do not know whether one cannot detect in our own period here in the United States an association between political views and scientific answers to the question of the genetic dangers from fallout and from other nuclear testing.

Apart from political bias, there have been cases of real cheating in science. Think of physical anthropology and its faked Piltdown Man. That the possibility of deception is not entirely beyond the pale of experimental scientists can be gathered from a splendid piece of fiction, a recent novel, *The Affair*, by C. P. Snow, the well-known Cambridge don.

Having said all this about the possibility of bias existing in the presentation of evidence and findings in the natural sciences, we should hasten to admit that not a few economists, especially when concerned with current problems and the interpretation of recent history, are given to "lying with statistics." It is hardly a coincidence if labor economists choose one base year and business economists choose another base year when they compare wage increases and price increases; or if for their computations of growth rates expert witnesses for different political parties choose different statistical series and different base years. This does not indicate that the social sciences are in this respect "superior" or "inferior" to the natural sciences. Think of physicists, chemists, medical scientists, psychiatrists, etc., appearing as expert witnesses in court litigation to testify in support of their clients' cases. In these instances the scientists are in the role of analyzing concrete individual events, of interpreting recent history. If there is a difference at all between the natural and social sciences in this respect, it may be that economists these days have more opportunities to present biased findings than their colleagues in the physical sciences. But even this may not be so. I may underestimate the opportunities of scientists and engineers to submit expert testimonies with paid-for bias.

The second way in which value judgments may affect the investigator does not involve any bias in his findings or his reports on his findings. But ethical judgments may be so closely connected with his problems that he may feel impelled to

³ Morris Cohen, *Reason and Nature: An Essay on the Meaning of Scientific Method* (New York: Harcourt, Brace, 1931), p. 348.

make evaluative pronouncements on the normative issues in question. For example, scientists may have strong views about vivisection, sterilization, abortion, hydrogen bombs, biological warfare, etc., and may express these views in connection with their scientific work. Likewise, social scientists may have strong views about the right to privacy, free enterprise, free markets, equality of income, old-age pensions, socialized medicine, segregation, education, etc., and they may express these views in connection with the results of their research. Let us repeat that this need not imply that their findings are biased. There is no difference on this score between the natural and the social sciences. The research and its results may be closely connected with values of all sorts, and value judgments may be expressed, and yet the objectivity of the research and of the reports on the findings need not be impaired.

The third way value judgments affect research is in the selection of the project, in the choice of the subject for investigation. This is unavoidable and the only question is what kinds of value and whose values are paramount. If research is financed by foundations or by the government, the values may be those which the chief investigator believes are held by the agencies or committees that pass on the allocation of funds. If the research is not aided by outside funds, the project may be chosen on the basis of what the investigator believes to be "social values," that is, he chooses a project that may yield solutions to problems supposed to be important for society. Society wants to know how to cure cancer, how to prevent hay fever, how to eliminate mosquitoes, how to get rid of crab grass and weeds, how to restrain juvenile delinquency, how to reduce illegitimacy and other accidents, how to increase employment, to raise real wages, to aid farmers, to avoid price inflation, and so on, and so forth. These examples suggest that the value component in the project selection is the same in the natural and in the social sciences. There are instances, thank God, in which the investigator selects his project out of sheer intellectual curiosity and does not give "two hoots" about the social importance of his findings. Still, to satisfy curiosity is a value too, and indeed a very potent one. We must not fail to mention the case of the graduate student who lacks imagination as well as intellectual curiosity and undertakes a project just because it is the only one he can think of, though neither he nor anybody else finds it interesting,

let alone important. We may accept this case as the exception to the rule. Such exceptions probably are equally rare in the natural and the social sciences.

Now we come to the one real difference, the fourth of our value-references. Social phenomena are defined as results of human action, and all human action is defined as motivated action. Hence, social phenomena are explained only if they are attributed to definite types of action which are "understood" in terms of the values motivating those who decide and act. This concern with values—not values which the investigator entertains but values he understands to be effective in guiding the actions which bring about the events he studies—is the crucial difference between the social sciences and the natural sciences. To explain the motion of molecules, the fusion or fission of atoms, the paths of celestial bodies, the growth or mutation of organic matter, etc., the scientist will not ask why the molecules want to move about, why atoms decide to merge or to split, why Venus has chosen her particular orbit, why certain cells are anxious to divide. The social scientist, however, is not doing his job unless he explains changes in the circulation of money by going back to the decisions of the spenders and hoarders, explains company mergers by the goals that may have persuaded managements and boards of corporate bodies to take such actions, explains the location of industries by calculations of such things as transportation costs and wage differentials, and economic growth by propensities to save, to invest, to innovate, to procreate or prevent procreation, and so on. My social-science examples were all from economics, but I might just as well have taken examples from sociology, cultural anthropology, political science, etc., to show that explanation in the social sciences regularly requires the interpretation of phenomena in terms of idealized motivations of the idealized persons whose idealized actions bring forth the phenomena under investigation.

An example may further elucidate the difference between the explanatory principles in non-human nature and human society. A rock does not say to us: "I am a beast," nor does it say: "I came here because I did not like it up there

⁴ Hans Kelsen, *Allgemeine Staatslehre* (Berlin: Springer, 1925), p. 129. Quoted with illuminating comments in Alfred Schütz, *Der sinnhafte Aufbau der sozialen Welt* (Wien: Springer, 1932).

near the glaciers, where I used to live; here I like it fine, especially this nice view of the valley." We do not inquire into value judgments of rocks. But we must not fail to take account of valuations of humans; social phenomena must be explained as the results of motivated human actions.

The greatest authorities on the methodology of the social sciences have referred to this fundamental postulate as the requirement of "subjective interpretation," and all such interpretation of "subjective meanings" implies references to values motivating actions. This has of course nothing to do with value judgments impairing the "scientific objectivity" of the investigators or affecting them in any way that would make their findings suspect. Whether the postulate of subjective interpretation which *differentiates* the social sciences from the natural sciences should be held to make them either "inferior" or "superior" is a matter of taste.

VERIFIABILITY OF HYPOTHESES

It is said that verification is not easy to come by in the social sciences, while it is the chief business of the investigator in the natural sciences. This is true, though many do not fully understand what is involved and, consequently, are apt to exaggerate the difference.

One should distinguish between what a British philosopher has recently called "high-level hypotheses" and "low-level generalizations."⁸ The former are postulated and can never be *directly* verified; a single high-level hypothesis cannot even be *indirectly* verified, because from one hypothesis standing alone nothing follows. Only a *whole system* of hypotheses can be tested by deducing from some set of general postulates and some set of specific assumptions the logical consequences, and comparing these with records of observations regarded as the approximate empirical counterparts of the specific assumptions and specific consequences.⁹ This holds for both the natural and the social sciences. (There is no need for *direct* tests of the fundamental postulates in physics—such as the laws of conservation of energy, of angular momentum, of motion—or

of the fundamental postulates in economics—such as the laws of maximizing utility and profits.)

While entire theoretical systems and the low-level generalizations derived from them are tested in the natural sciences, there exist at any one time many unverified hypotheses. This holds especially with regard to theories of creation and evolution in such fields as biology, geology, and cosmogony; for example (if my reading is correct), of the theory of the expanding universe, the dust-cloud hypothesis of the formation of stars and planets, of the low-temperature or high-temperature theories of the formation of the earth, of the various (conflicting) theories of granitization, etc. In other words, where the natural sciences deal with non-reproducible occurrences and with sequences for which controlled experiments cannot be devised, they have to work with hypotheses which remain untested for a long time, perhaps forever.

In the social sciences, low-level generalizations about recurring events are being tested all the time. Unfortunately, often several conflicting hypotheses are consistent with the observed facts and there are no crucial experiments to eliminate some of the hypotheses. But everyone of us could name dozens of propositions that have been disconfirmed, and this means that the verification process has done what it is supposed to do. The impossibility of controlled experiments and the relatively large number of relevant variables are the chief obstacles to more efficient verification in the social sciences. This is not an inefficiency on the part of our investigators, but it lies in the nature of things.

EXACTNESS OF FINDINGS

Those who claim that the social sciences are "less exact" than the natural sciences often have a very incomplete knowledge of either of them, and a rather hazy idea of the meaning of "exactness." Some mean by exactness measurability. This we shall discuss under a separate heading. Others mean accuracy and success in predicting future events, which is something different. Others mean reducibility to mathematical language. The meaning of exactness best founded in intellectual history is the possibility of constructing a theoretical system of idealized models containing abstract constructs of variables and of relations between variables, from which most or all propositions concerning particular connec-

⁸ Richard B. Braithwaite, *Scientific Explanation: A Study of the Function of Theory, Probability and Law in Science* (Cambridge, Mass.: Harvard University Press, 1953).

⁹ Frits Machlup, "The Problem of Verification in Economics," *Southern Economic Journal*, July 1955.

tions can be deduced. Such systems do not exist in several of the natural sciences—for example, in several areas of biology—while they do exist in at least one of the social sciences: economics.

We cannot foretell the development of any discipline. We cannot say now whether there will soon or ever be a "unified theory" of political science, or whether the piecemeal generalizations which sociology has yielded thus far can be integrated into one comprehensive theoretical system. In any case, the quality of "exactness," if this is what is meant by it, cannot be attributed to all the natural sciences nor denied to all the social sciences.

MEASURABILITY OF PHENOMENA

If the availability of numerical data were in and of itself an advantage in scientific investigation, economics would be on the top of all sciences. Economics is the only field in which the raw data of experience are already in numerical form. In other fields the analyst must first quantify and measure before he can obtain data in numerical form. The physicist must weigh and count and must invent and build instruments from which numbers can be read, numbers standing for certain relations pertaining to essentially non-numerical observations. Information which first appears only in some such form as "relatively" large, heavy, hot, fast, is later transformed into numerical data by means of measuring devices such as rods, scales, thermometers, speedometers. The economist can begin with numbers. What he observes are prices and sums of moneys. He can start out with numerical data given to him without the use of measuring devices.

The compilation of masses of data calls for resources which only large organizations, frequently only the government, can muster. This, in my opinion, is unfortunate because it implies that the availability of numerical data is associated with the extent of government intervention in economic affairs, and there is therefore an inverse relation between economic information and individual freedom.

Numbers, moreover, are not all that is needed. To be useful, the numbers must fit the concepts used in theoretical propositions or in comprehensive theoretical systems. This is rarely the case with regard to the raw data of economics, and thus the economic analyst still has the prob-

lem of obtaining comparable figures by transforming his raw data into adjusted and corrected ones, acceptable as the operational counterparts of the abstract constructs in his theoretical models. His success in this respect has been commendable, but very far short of what is needed; it cannot compare with the success of the physicist in developing measurement techniques yielding numerical data that can serve as operational counterparts of constructs in the models of theoretical physics.

Physics, however, does not stand for all natural sciences, nor economics for all social sciences. There are several fields, in both natural and social sciences, where quantification of relevant factors has not been achieved and may never be achieved. If Lord Kelvin's phrase, "Science is Measurement," were taken seriously, science might miss some of the most important problems. There is no way of judging whether non-quantifiable factors are more prevalent in nature or in society. The common reference to the "hard" facts of nature and the "soft" facts with which the student of society has to deal seems to imply a judgment about measurability. "Hard" things can be firmly gripped and measured, "soft" things cannot. There may be something to this. The facts of nature are perceived with our "senses," the facts of society are interpreted in terms of the "sense" they make in a motivational analysis. However, this contrast is not quite to the point, because the "sensory" experience of the natural scientist refers to the *data*, while the "sense" interpretation by the social scientist of the ideal-typical inner experience of the members of society refers to basic *postulates* and intervening variables.

The conclusion, that we cannot be sure about the prevalence of non-quantifiable factors in natural and social sciences, still holds.

CONSTANCY OF NUMERICAL RELATIONSHIPS

On this score there can be no doubt that some of the natural sciences have got something which none of the social sciences has got: "constants," unchanging numbers expressing unchanging relationships between measurable quantities.

The discipline with the largest number of constants is, of course, physics. Examples are the velocity of light ($c = 2.99776 \times 10^{10}$ cm/sec), Planck's constant for the smallest increment of spin or angular momentum ($h = 6.624 \times 10^{-27}$

erg. sec), the gravitation constant ($G = 6.6 \times 10^{-8}$ dyne cm² gram⁻²), the Coulomb constant ($e = 4.8025 \times 10^{-10}$ units), proton mass ($M = 1.672 \times 10^{-24}$ gram), the ratio of proton mass to electron mass ($M/m = 1836.13$), the fine-structure constant ($\alpha^{-1} = 137.0371$). Some of these constants are postulated (conventional), others (the last two) are empirical, but this makes no difference for our purposes. Max Planck contended, the postulated "universal constants" were not just "invented for reasons of practical convenience, but have forced themselves upon us irresistibly because of the agreement between the results of all relevant measurements."⁷

I know of no numerical constant in any of the social sciences. In economics we have been computing certain ratios which, however, are found to vary relatively widely with time and place. The annual income-velocity of circulation of money, the marginal propensities to consume, to save, to import, the elasticities of demand for various goods, the savings ratios, capital-output ratios, growth rates—none of these has remained constant over time or is the same for different countries. They all have varied, some by several hundred per cent of the lowest value. Of course, one has found "limits" of these variations, but what does this mean in comparison with the virtually immutable physical constants? When it was noticed that the ratio between labor income and national income in some countries has varied by "only" ten per cent over some twenty years, some economists were so perplexed that they spoke of the "constancy" of the relative shares. (They hardly realized that the 10 per cent variation in that ratio was the same as about a 25 per cent variation in the ratio between labor income and non-labor income.) That the income velocity of circulation of money has rarely risen above 3 or fallen below 1 is surely interesting, but this is anything but a "constant." That the marginal propensity to consume cannot in the long run be above 1 is rather obvious, but in the short run it may vary between .7 and 1.2 or even more. That saving ratios (to national income) have never been above 15 per cent in any country regardless of the economic system (communitistic or capitalistic, regulated or es-

entially free) is a very important fact; but saving ratios have been known to be next to zero, or even negative, and the variations from time to time and country to country are very large indeed.

Sociologists and actuaries have reported some "relatively stable" ratios—accident rates, birth rates, crime rates, etc.—but the "stability" is only relative to the extreme variability of other numerical ratios. Indeed, most of these ratios are subject to "human engineering," to governmental policies designed to change them, and hence they are not even thought of as constants.

The verdict is confirmed: while there are important numerical constants in the natural sciences, there are none in the social sciences.

PREDICTABILITY OF FUTURE EVENTS

Before we try to compare the success which natural and social sciences have had in correctly predicting future events, a few important distinctions should be made. We must distinguish hypothetical or conditional predictions from unconditional predictions or forecasts. And among the former we must distinguish those where all the stated conditions can be controlled, those where all the stated conditions can be either controlled or unambiguously ascertained before the event, and finally those where some of the stated conditions can neither be controlled nor ascertained early enough (if at all). A conditional prediction of the third kind is such an "iffy" statement that it may be of no use unless one can know with confidence that it would be highly improbable for these problematic conditions (uncontrollable and not ascertainable before the event) to interfere with the prediction. A different kind of distinction concerns the numerical definiteness of the prediction: one may predict that a certain magnitude (a) will change, (b) will increase, (c) will increase by at least so-and-so much, (d) will increase within definite limits, or (e) will increase by a definite amount. Similarly, the prediction may be more or less definite with respect to the time within which it is supposed to come true. A prediction without any time specification is worthless.

Some people are inclined to believe that the natural sciences can beat the social sciences on any count, in unconditional predictions as well as in conditional predictions fully specified as to

⁷Max Planck, *Scientific Autobiography and Other Papers* (New York: Philosophical Library, 1949), p. 173.

definite conditions, exact degree and time of fulfillment. But what they have in mind are the laboratory experiments of the natural sciences, in which predictions have proved so eminently successful; and then they look at the poor record social scientists have had in predicting future events in the social world which they observe but cannot control. This comparison is unfair and unreasonable. The artificial laboratory world in which the experimenter tries to control all conditions as best as he can is different from the real world of nature. If a comparison is made, it must be between predictions of events in the real natural world and in the real social world.

Even for the real world, we should distinguish between predictions of events which we try to bring about by design and predictions of events in which we have no part at all. The teams of physicists and engineers who have been designing and developing machines and apparatuses are not very successful in predicting their performance when the design is still new. The record of predictions of the paths of moon shots and space missiles has been rather spotty. The so-called "bugs" that have to be worked out in any new contraption are nothing but predictions gone wrong. After a while predictions become more reliable. The same is true, however, with predictions concerning the performance of organized social institutions. For example, if I take an envelop, put a certain address on it and a certain postage stamp, and deposit it in a certain box on the street, I can predict that after three or four days it will be delivered at a certain house thousands of miles away. This prediction and any number of similar predictions will prove correct with a remarkably high frequency. And you don't have to be a social scientist to make such successful predictions about an organized social machinery, just as you don't have to be a natural scientist to predict the result of your pushing the electric-light switch or of similar manipulations of a well-tried mechanical or electrical apparatus.

There are more misses and fewer hits with regard to predictions of completely unmanipulated and unorganized reality. Meteorologists have a hard time forecasting the weather for the next 24 hours or two or three days. There are too many variables involved and it is too difficult to obtain complete information about some of them. Economists are only slightly better in

forecasting employment and income, exports and tax revenues for the next six months or for a year or two. Economists, moreover, have better excuses for their failures because of unpredictable "interferences" by governmental agencies or power groups which may even be influenced by the forecasts of the economists and may operate to defeat their predictions. On the other hand, some of the predictions may be self-fulfilling in that people, learning of the predictions, act in ways which bring about the predicted events. One might say that economists ought to be able to include the "psychological" effects of their communications among the variables of their models and take full account of these influences. There are, however, too many variables, personal and political, involved to make it possible to allow for all effects which anticipations, and anticipations of anticipations, may have upon the end results. To give an example of a simple self-defeating prediction from another social science: traffic experts regularly forecast the number of automobile accidents and fatalities that are going to occur over holiday weekends, and at the same time they hope that their forecasts will influence drivers to be more careful and thus to turn the forecasts into exaggerated fears.

We must not be too sanguine about the success of social scientists in making either unconditional forecasts or conditional predictions. Let us admit that we are not good in the business of prophecy and let us be modest in our claims about our ability to predict. After all, it is not our stupidity which hampers us, but chiefly our lack of information, and when one has to make do with bad guesses in lieu of information the success cannot be great. But there is a significant difference between the natural sciences and the social sciences in this respect: Experts in the natural sciences usually do not try to do what they know they cannot do; and nobody expects them to do it. They would never undertake to predict the number of fatalities in a train wreck that might happen under certain conditions during the next year. They do not even predict next year's explosions and epidemics, floods and mountain slides, earthquakes and water pollution. Social scientists, for some strange reason, are expected to foretell the future and they feel badly if they fail.

DISTANCE FROM EVERY-DAY EXPERIENCE

Science is, almost by definition, what the layman cannot understand. Science is knowledge accessible only to superior minds with great effort. What everybody can know cannot be science.

A layman could not undertake to read and grasp a professional article in physics or chemistry or biophysics. He would hardly be able to pronounce many of the words and he might not have the faintest idea of what the article was all about. Needless to say, it would be out of the question for a layman to pose as an expert in a natural science. On the other hand, a layman might read articles in descriptive economics, sociology, anthropology, social psychology. Although in all these fields technical jargon is used which he could not really understand, he might *think* that he knows the sense of the words and grasps the meanings of the sentences; he might even be inclined to poke fun at some of the stuff. He believes he is—from his own experience and from his reading of newspapers and popular magazines—familiar with the subject matter of the social sciences. In consequence, he has little respect for the analyses which the social scientists present.

The fact that social scientists use less Latin and Greek words and less mathematics than their colleagues in the natural science departments and, instead, use everyday words in special, and often quite technical, meanings may have something to do with the attitude of the layman. The sentences of the sociologist, for example, make little sense if the borrowed words are understood in their non-technical, every-day meaning. But if the layman is told of the special meanings that have been bestowed upon his words, he gets angry or condescendingly amused.

But we must not exaggerate this business of language and professional jargon because the problem really lies deeper. The natural sciences talk about nuclei, isotopes, galaxies, benzoids, drosophilas, chromosomes, dodecahedrons, Pleistocene fossils, and the layman marvels that anyone really cares. The social sciences, however,—and the layman usually finds this out—talk about—him. While he never identifies himself with a positron, a pneumococcus, a coenzyme, or a digital computer, he does identify himself with many of the ideal types presented by the

social scientist, and he finds that the likeness is poor and the analysis “consequently” wrong.

The fact that the social sciences deal with man in his relations with fellow man brings them so close to man's own everyday experience that he cannot see the analysis of this experience as something above and beyond him. Hence he is suspicious of the analysts and disappointed in what he supposes to be a portrait of him.

STANDARDS OF ADMISSION AND REQUIREMENTS

High-school physics is taken chiefly by the students with the highest I.Q.'s. At college the students majoring in physics, and again at graduate school the students of physics, are reported to have on the average higher I.Q.'s than those in other fields. This gives physics and physicists a special prestige in schools and universities, and this prestige carries over to all natural sciences and puts them somehow above the social sciences. This is rather odd, since the average quality of students in different departments depends chiefly on departmental policies, which may vary from institution to institution. The pre-eminence of physics is rather general because of the requirement of calculus. In those universities in which the economics department requires calculus, the students of economics rank as high as the students of physics in intelligence, achievement, and prestige.

The lumping of all natural sciences for comparisons of student quality and admission standards is particularly unreasonable in view of the fact that at many colleges some of the natural science departments, such as biology and geology, attract a rather poor average quality of student. (This is not so in biology at universities with many applicants for a pre-medical curriculum.) The lumping of all social sciences in this respect is equally wrong, since the differences in admission standards and graduation requirements among departments, say between economics, history, and sociology, may be very great. Many sociology departments have been notorious for their role as refuge for mentally underprivileged undergraduates. Given the propensity to overgeneralize, it is no wonder then that the social sciences are being regarded as the poor relations of the natural sciences and as disciplines for which students who cannot qualify for the sciences are still good enough.

Since I am addressing economists, and since

economics departments, at least at some of the better colleges and universities, are maintaining standards as high as physics and mathematics departments, it would be unfair to level exhortations at my present audience. But perhaps we should try to convince our colleagues in all social science departments of the disservice they are doing to their fields and to the social sciences at large by admitting and keeping inferior students as majors. Even if some of us think that one can study social sciences without knowing higher mathematics, we should insist on making calculus and mathematical statistics absolute requirements—as a device for keeping away the weakest students.

Despite my protest against improper generalizations, I must admit that averages may be indicative of something or other, and that the average I.Q. of the students in the natural science departments is higher than that of the students in the social science department.* No field can be better than the men who work in it. On this score, therefore, the natural sciences would be superior to the social sciences.

THE SCORE CARD

We may now summarize the tallies on the nine scores.

1. With respect to the invariability or recurrence of observations, we found that the greater number of variables—of relevant factors—in the social sciences makes for more variation, for less recurrence of exactly the same sequences of events.

2. With respect to the objectivity of observations and explanations, we distinguished several ways in which references to values and value judgments enter scientific activity. Whereas the social sciences have a requirement of "subjective interpretation of value-motivated actions" which does not exist in the natural sciences, this does not affect the proper "scientific objectivity" of the social scientist.

3. With respect to the verifiability of hypotheses, we found that the impossibility of con-

trolled experiments combined with the larger number of relevant variables does make verification in the social sciences more difficult than in most of the natural sciences.

4. With respect to the exactness of the findings, we decided to mean by it the existence of a theoretical system from which most propositions concerning particular connections can be deduced. Exactness in this sense exists in physics and in economics, but much less so in other natural and other social sciences.

5. With respect to the measurability of phenomena, we saw an important difference between the availability of an ample supply of numerical data and the availability of such numerical data as can be used as good counterparts of the constructs in theoretical models. On this score, physics is clearly ahead of all other disciplines. It is doubtful that this can be said about the natural sciences in general relative to the social sciences in general.

6. With respect to the constancy of numerical relationships, we entertained no doubt concerning the existence of constants, postulated or empirical, in physics and in other natural sciences, whereas no numerical constants can be found in the study of society.

7. With respect to the predictability of future events, we ruled out comparisons between the laboratory world of some of the natural sciences and the unmanipulated real world studied by the social sciences. Comparing only the comparable, the real worlds—and excepting the special case of astronomy—we found no essential differences in the predictability of natural and social phenomena.

8. With respect to the distance of scientific from every-day experience, we saw that in linguistic expression as well as in their main concerns the social sciences are so much closer to pre-scientific language and thought that they do not command the respect that is accorded to the natural sciences.

9. With respect to the standards of admission and requirements, we found that they are on the average lower in the social than in the natural sciences.

The last of these scores relates to the current practice of colleges and universities, not to the character of the disciplines. The point before the last, though connected with the character of the social sciences, relates only to the popular

* The average I.Q. of students receiving bachelor's degrees was, according to a 1954 study, 121 in the biological sciences, and 122 in economics, 127 in the physical sciences, and 119 in business. See Dael Wolfe, *America's Resources of Specialized Talent: The Report of the Commission on Human Resources and Advanced Training* (New York: Harpers, 1954), pp. 319-322.

appreciation of these disciplines; it does not aid in answering the question whether the social sciences are "really" inferior. Thus the last two scores will not be considered relevant to our question. This leaves seven scores to consider. On four of the six no real differences could be established. But on the other three scores, on "Invariance," "Verifiability," and "Numerical Constants," we found the social sciences to be inferior to the natural sciences.

THE IMPLICATIONS OF INFERIORITY

What does it mean if one thing is called "inferior" to another with regard to a particular "quality"? If this "quality" is something that is highly valued in any object, and if the absence of this "quality" is seriously missed regardless of other qualities present, then, but only then, does the noted "inferiority" have any evaluative implications. In order to show that "inferiority" sometimes means very little, I shall present here several statements about differences in particular qualities.

"Champagne is inferior to rubbing alcohol in alcoholic content."

"Beef steak is inferior to strawberry jello in sweetness."

"A violin is inferior to a violoncello in physical weight."

"Chamber music is inferior to band music in loudness."

"Hamlet is inferior to Joe Palooka in appeal to children."

"Sandpaper is inferior to velvet in smoothness."

"Psychiatry is inferior to surgery in ability to effect quick cures."

"Biology is inferior to physics in internal consistency."

It all depends on what you want. Each member in a pair of things is inferior to the other in some respect. In some instances it may be precisely this inferiority that makes the thing desirable. (Sandpaper is wanted *because* of its inferior smoothness.) In other instances the inferiority in a particular respect may be a matter of indifference. (The violin's inferiority in physical weight neither adds to nor detracts from its relative value.) Again in other instances the particular inferiority may be regrettable, but nothing can be done about it and the thing in question may be wanted none the less. (We need

psychiatry, however much we regret that in general it cannot effect quick cures; and we need biology, no matter how little internal consistency has been attained in its theoretical systems.)

We have stated that the social sciences are inferior to the natural sciences in some respects, for example, in verifiability. This is regrettable. If propositions cannot be readily tested, this calls for more judgment, more patience, more ingenuity. But does it mean much else?

THE CRUCIAL QUESTION: "SO WHAT?"

What is the pragmatic meaning of the statement in question? If I learn, for example, that drug E is inferior to drug P as a cure for hay fever, this means that, if I want such a cure, I shall not buy drug E. If I am told Mr. A is inferior to Mr. B as an automobile mechanic, I shall avoid using Mr. A when my car needs repair. If I find textbook K inferior to textbook S in accuracy, organization, as well as exposition, I shall not adopt textbook K. In every one of these examples, the statement that one thing is inferior to another makes pragmatic sense. The point is that all these pairs are *alternatives* between which a choice is to be made.

Are the natural sciences and the social sciences alternatives between which we have to choose? If they were, a claim that the social sciences are "inferior" could have the following meanings:

1. We should not study the social sciences.
2. We should not spend money on teaching and research in the social sciences.
3. We should not permit gifted persons to study social sciences and should steer them toward superior pursuits.
4. We should not respect scholars who so imprudently chose to be social scientists.

If one realizes that none of these things could possibly be meant, that every one of these meanings would be preposterous, and that the social sciences and the natural sciences can by no means be regarded as alternatives but, instead, that both are needed and neither can be dispensed with, he can give the inferiority statement perhaps one other meaning:

5. We should do something to improve the social sciences and remedy their defects.

This last interpretation would make sense if the differences which are presented as grounds for the supposed inferiority were "defects" that can be remedied. But they are not. That there

are more variety and change in social phenomena; that, because of the large number of relevant variables and the impossibility of controlled experiments, hypotheses in the social sciences cannot be easily verified; and that no numerical constants can be detected in the social world—these are not defects to be remedied but fundamental properties to be grasped, accepted, and taken into account. Because of these properties research and analysis in the social sciences hold greater complexities and difficulties. If you wish, you may take this to be

a greater challenge, rather than a deterrent. To be sure, difficulty and complexity alone are not sufficient reasons for studying certain problems. But the problems presented by the social world are certainly not unimportant. If they are also difficult to tackle, they ought to attract ample resources and the best minds. Today they are getting neither. The social sciences are "really inferior" regarding the place they are accorded by society and the priorities with which financial and human resources are allocated. This inferiority is curable.

METHODOLOGY IN ECONOMICS—PART I*

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The purpose of teaching and writing on economics I take to be to give the public a general understanding of the "economic order" or organization that prevails in a modern "free" nation, for their guidance in social action affecting it. The "trouble" with this branch of knowledge is largely in the definition of concepts and statement of problems, and especially in describing the subject-matter and fixing its boundaries. Social action means politicolegal action, which must be undertaken in the light of socially accepted ideals; but the relation between the three "orders," the economic, the political and the moral, is largely one of mutuality and overlapping all around and no clear boundaries can be drawn. Still further, the given conditions of action include all the main features of human nature, not to mention the non-human environment. Accordingly, the knowledge relevant to economics in practical application is virtually all knowledge; emphasis on knowledge of man and society is hardly a restriction, for man is a "pluralistic" entity—physical, biological and mental, with important further subdivisions, especially between the different aspects of human mental life. Since the study of these different realms of being uses different basic concepts and presuppositions, it is no wonder that "scope and method" in economics is a field of controversy.

A source of difficulty to be especially named is the role of history, in relation to the sciences that describe and analyze some reality in terms of constancy or repetition. Man and society are in a special way and degree products of history; and in particular, the present-day reality is the result of recent and revolutionary changes. Economics as a discipline is a quite recent arrival on the scene, because it assumes individual freedom and hence there was no place for it in earlier forms of society. One approach to an understanding of any existing reality is the study of how it came to be,

or to be what it is, and this is most vitally true of things human and social. This point of view would not be as important as it is if history dealt only with the past that is definitely past; but in our subject-matter history is still visibly going on; the phenomena are constantly changing, and it is the changes in which our interest, both theoretical and practical, especially centers, changes to be explained by finding causes, or to be brought about by deliberate action. It would be very useful, if space allowed, to indicate something about the "liberal revolution," which so recently transformed the character and social relations of Western European man. It replaced static and authoritarian medieval ideas and ideals with secular ones of freedom and progress, embodied in the institutions of the free market, of political democracy and of intellectual, cultural and religious freedom—and in particular of modern science. Space does not allow, and I shall only mention the two stages of change, at the periods respectively of the Renaissance and Reformation and of the Enlightenment. The first of these brought the great intellectual break of science, first in astronomy and later in other branches; and also the establishment of great modern states, though in the form of absolute monarchies. The second saw the greater social changes, especially the inseparably connected economic order of free enterprise and the political order of democracy. Comparative liberation of thought from dictation, first by the Church through the political order, as its "secular arm," and then conversely, with the state as the dominant partner, came about gradually over the whole period of some three centuries, and is still incomplete. When the state was democratized, the newly sovereign people acquired the right, practically unlimited, to make—meaning to change—the laws, which the ecclesiastical or political absolutisms might claim but hardly tried to exercise.

History of course changes all the data, concepts and problems of economic life, as of all conduct and thinking. The Revolution that ushered in the modern western world effectively began by creating modern natural science, with a

* Part I of this article deals with General Considerations and Basic Concepts. Part II, which will be published in the April 1961 issue of this Journal, will present Basic Organization: Concepts and Principles of Free Enterprise.

historically new attitude toward the non-human world and a new conception of knowledge. The most decisive break with the past was in the field of astronomy, where the role of knowledge is to predict and explain, with no thought of controlling the subject-matter. With Galileo, the new ideas soon spread into mechanics, where control is of the essence, and led to marvelous useful discoveries and inventions. Astronomy, be it noted, is a historical discipline and is practically the only science that predicts events concretely, in time. The experimental sciences in general predict hypothetically—"if A, then B" (usually in measured amounts), and especially with reference to the consequences of human acts, "if" they are performed. The movement spread into geology and finally into biology where the historical principle of evolution explains the past but has little value for prediction, still less for control. The custodians of sacred and hence eternal and immutable truth of course put up a "last-ditch" resistance to the acceptance of freedom and progress—freedom for progress and progress through freedom—in the intellectual sphere. But in science and technology the new attitude triumphed, through empirical and inductive evidence, and especially through experimental demonstration and the creation of useful devices. In that field, men think largely with hands and eyes, not with unaided brains. As Bacon was preaching in Galileo's day, such knowledge is essentially power—power of "man" over "nature," and specifically power to use given means to achieve given ends.

This last clause obviously states the general nature of economic conduct, and economic and political categories together set rather the most crucial problem of methodology for this "science," especially as to the sense in which it is or can be a science. The natural sciences tell men how to achieve given ends, not what ends to pursue, and a society committed to individual freedom must reject power of men over other men, to the extent that its institutions make literal freedom effective. The intelligent free individual patently does not use "scientific method" in deciding upon his ends—beyond ascertaining which ends he "can" achieve with the available means, by what procedure and at what cost including as an end acquiring more means. But the use of means by individuals can be made indefinitely more effective by associative effort or "co-operation," which implies organization, with leadership and special

roles, and in that connection arise the main practical social problems of economics. Power relations between persons cannot be mutual, and it is nearly as obvious that people cannot scientifically predict each other's conduct and act on their predictions, since that would nullify the predictions. To act in society as free men, they must agree on the terms of association and the form of organization; and that necessity involves agreement on values in a sense over and beyond given subjective individual desires. Any attempt to apply to social relations the instrumental methods and knowledge of "science" in the meaning of natural science, is a prescription for chaos, the "war of all against all." As it works out, men will not voluntarily agree, especially in large-scale society, on the matters on which agreement is necessary for free co-operation, and hence organized economic life requires laws, and a government with power to enforce them—and to change them to meet the new conditions that constantly arise through progress.

Accordingly, economics in its practical aspect cannot be sharply distinct from politics-and-jurisprudence (which ought to be one word), or from ethics, in the special sense of the social ideals involved in the conception of progress—or, as also noted before, from "psychology" as a general science of human nature or, finally and especially, from history, in its many aspects or divisions. And still further, the theory of knowledge is clearly involved—"epistemology" in philosophical jargon—notably as to the different ways in which men acquire knowledge about nature and about themselves, each other and their social relations embodied in "institutions"; also the use of knowledge, rightful or wrongful, as power. However, economics cannot deal with all knowledge, of "facts" in all fields, and their "laws," and of human motives, desires and values; it must specialize (though "institutionalists" oppose). One of the main objectives in these two articles is to describe in outline a central area of inquiry which is *distinctively* economics. The delineation of its field, in relation to other fields, has been a main subject of controversy over "scope and method" since this argument took its rise in the "historical schools" in Germany around the middle of the 19th century. In that language region, it broadened out into or to include a "sociological" economics (Max Weber, Sombart and others) and was a forerunner of Institutionalism in this coun-

try, a movement too heterogeneous for brief characterization.

To define our branch of knowledge I start from the words "economy" and "to economize," which now have a fairly well understood meaning in general discourse. According to the dictionary, they refer to the husbanding of resources, to make them go as far as possible (the O.E.D.) or more precisely, to make given means achieve a "maximum" of some general end. (The nature of the end has of course been a main topic of controversy for nearly a century in the literature of the profession.) The words are historically new in this general meaning, though coined by the Greeks and long used to refer to household or estate management; this, transferred to the state, became "political economy," which was generalized and individualized into "economics" around the turn of the present century. Economy is a rough synonym for "efficiency," an idea which became definite in modern thinking with the development of engineering, especially the effort to economize fuel consumption in the steam engine. The older "classical" political economy contributed little more than adumbrations in formulating the concepts familiar now. A great "break" occurred with the introduction of utility-theory and algebraic treatment, nearly a century after Adam Smith, and nearly that long ago.

All this I take as familiar matter to anyone seriously interested in our subject. Next, I go on to stress that a treatment of economics as defined by this basic notion cannot be an "empirical" science in the literal sense of that word. Effectiveness, a synonym for economy, is inherently relative to some purpose, motive or intention, and these are not known, by one person for himself or for others, through sense observation; nor yet through experiment, in a direct or scientific meaning. As already indicated, economy involves the use of "given" means to achieve "given" ends. The next step toward a definition is specifically to restrict ends to desires, excluding values in any objective meaning as belonging to a separate province, axiology. That means chiefly to "ethics" appropriately defined, or "aesthetics" which treats of "taste" as objectively good or bad (in contrast with that "mere" taste about which there is proverbially no arguing). Values are of course desired, if they function as motives, but they have in addition the objective quality which makes them subject to approval and disapproval and

to discussion. The general principles or "theory" of economics are known "a-priori" or simply as facts,¹ not through investigation or systematic inquiry. "Everyone knows" that people use means to achieve ends—and also that that is by no means the whole of purposive or motivated behavior, or "conduct." We also know that the use of given means is typically indirect, to "produce" goods and services, which are the direct means of satisfying wants. We know, too, that typically a plurality of direct means are used to yield a highly composite "total satisfaction," also that a plurality of the given "most indirect" means (none are really primary) are typically used in producing any particular "good or service," and finally, that the economic task in both cases is one of "correct" proportioning. But all these facts, while familiar and "axiomatic" when explicitly stated, raise questions and need much elucidation, even defense.

That the economic problem is one of correct proportioning suggests the next step in definition, the negative fact that it is *not* one of technology. This creates a difficulty for the exposition in that using correct technique is a main part of the meaning that the concept of economizing has in general thought and usage. But the choice among given technical processes is one of all or none, or selecting the best available, and not of proportioning different ones or any one in relation to those resources that are variable and measurable magnitudes. Selecting is not a technique in any realistic sense of the word; research and invention are another matter, and more must be said about "quantitativeness" and measuring, especially in connection with ends. With respect to technology, it should be noted that engineering efficiency is always a part of economic efficiency, separated out for special reasons, and that the latter always takes precedence in rational planning. The "physical" efficiency of a steam plant or nearly any device can be increased beyond any assigned

¹ If I could go into "epistemology," I should express doubt as to whether there is finally any difference between a-priori truth and familiar matter of fact; thus, one of the major difficulties of the economist is that his task is largely to teach the people things that they already really know, i.e., it is to overcome "prejudice." A humorist has remarked that it's not ignorance that does the most damage, but knowin' so derned much that ain't so—and more paradoxically, much of it is really known to be false.

limit, short of a theoretical hundred per-cent, by incurring enough "expense," which means by sacrificing economic efficiency. Efficiency or economy is a ratio, between an input and an output, but with the essential modifier "useful" applied to both. And usefulness is a subjective desideratum and a matter of degree. For economics, I repeat, it is "desiredness," known and quantified intuitively in some comparison, by the individual making a choice. A desire may also be an objective value for the individual (and usually is, more or less) but the economist ignores that element, though for any application to social policy (action by any group acting as a unit) value considerations in the higher sense are necessarily considered. In an economy organized through exchange, economic value is made "quasi-objective" and can be crudely said to be measured, by price; market competition makes the relative desiredness of any two goods the same "at the margin" for all parties who compare them and choose both in some proportion. Purely technical efficiencies would be compared by using two processes with the same physical quantities of the same (scarce) inputs and outputs. This procedure is hardly ever carried out in reality; efficiency in terms of some major physical magnitudes is measured (usually energy, or an important raw material) and the result qualified by economic values found in the market or estimated.

Let me repeat that economic magnitudes are values, subjective or objective, and values in either sense are subjectively compared but not really measured. Economics is not a strictly empirical science; its axioms and conclusions are not known by sense observation and cannot be verified, as even those of ordinary mathematics can be, by measuring and counting (to any degree of accuracy and generality thought worth the trouble). An economic good is defined in terms of usefulness; for example, the wheat bought and sold on the Board of Trade is not the wheat of the botanist, nor that of the physiologist, dietician or bio-chemist, though such sciences contribute to the classification and "grading" for quality or use by which the wheat of commerce must be described. Economics deals with human beings, and their study demands a *pluralistic* approach. The human individual is basically a physico-chemical complex, subject within the limits of measurement to the laws discovered by physical

science. Not rigorously; for he is also a biological organism, subject to other laws and not fully describable in physical terms, even as to the plants and lowest animals. Organisms must be interpreted in terms of "function," a purposive or teleological concept. Beyond this level, man is one of the "higher" animals, that clearly manifest mind, both emotion and at least a primitive form of "reason." Consciousness cannot be "explained," either in terms of physics or chemistry or in those of biology. No reason can be found for its occurrence, or statement made as to how it functions; but it is "undeniably" both real and functional, in non-human species as well as in man.

Upon all these "strata" human mentality is superposed, as life is superposed on physical processes and animal mentality upon vegetative life. The word "strata" fits here, because the reasonable interpretation of the whole series is temporal sequence in a long process of "emergent evolution." Man differs *radically* from other animals, in kind as well as in degree. They know "what to do," instinctively, as we say, in the situations they normally face; and in general they know and do what is good for them, in the relevant meaning of good—as individuals, as groups where they live in a group life, and as species. Man's differences in these respects underlie all human problems. No doubt the first great step in the transformation of some pithecoïd species into *homo* was the virtual replacement of instincts by *culture*, or institutions, transmitted through imitation of their elders by the young of each generation, instead of inheritance through the gene mechanism. This change may be partly explained in terms of natural selection, by the vast increase made possible in speed of adaptation—of behavior; and this was achieved in that field, apparently at the cost of stopping structural evolution, if not reversing the trend.

The crucial institution is *language*, the medium of culture continuity and change, and the great instrumentality for a vastly transformed mentality, now essentially social, in both the emotional and the intellectual sectors. In becoming man, the species not only achieved or experienced a revolutionary development of "reason," presumably in the first place because it was better than instinct for promoting survival and increase; but the greater change took place in his emotional life, which sets radically different ends. The intellectual side is greatly over-emphasized

in man's characterization of himself as *homo sapiens*—the wise. A word expressing romanticism or absurdity, or even mendacity, would be more descriptive. Man is not by nature in general or predominantly a lover of truth; many forms of fiction are more interesting, and he dislikes the task of keeping the two separate. This he will not usually do unless the truth yields power or has glamor, and often avoids it even where truth is a condition of an objectively more tolerable existence. Said Nietzsche, we have art to keep us from dying of the truth; and Talleyrand remarked that speech is given to men for disguising their thoughts. As to the transition, there are no records of the most important changes involved in producing human nature. We know about practically nothing except tool-making and what can be inferred from a few skeletal fragments. We cannot expect any knowledge of the feelings or values of the first men, of such crucial traits as the sense of beauty or humor, or especially the social order in which speech must have developed.

Beginning with the most primitive men accessible for study, the outstanding fact of conscious human mentality is irrationality; among savages the barbarians, myth, magic, taboos, witchcraft and infinitely various superstitions took the place occupied in modern thought by all science and history. Moreover, these ideas were largely "disfunctional," sometimes even grossly destructive, biologically. The really effective activities were largely controlled by unconscious processes, in spite of men's thinking. Particularly mysterious is the development of language, and its original use; but it seems clear that intelligent communication has never been and is not now its main role, and perhaps will always be secondary to emotional expression. We confront the two-fold mystery of evolution having produced a practically uniform human species, while culture history has led to boundless divergence, and strife. The supreme paradox is that as men have become more civilized, what must have been the original instrumental relation between the mental and the bodily life has been largely inverted; they now treat the latter as primarily a means to essentially emotional experience, often more or less inimical to biological ends. They often prefer quality of life to increased quantity, in opposition to the theory of natural selection, and use their intelligence to circumvent nature, even to indi-

vidual suicide and especially the wholesale mutual destruction of war. All this is part of the vaunted "dignity of man," and may be either good or bad. A major product of the humanization is a vast development of the attitude of rivalry, the contest spirit, which is instrumentally irrational. It is manifested in playing games with rules, which tend to end in a fight; and "competition" is the chief drive in our serious social activities, in economic and political relations and cultural pursuits and religion, even in ordinary "sociability." Such facts make the economic view of human conduct "unrealistic," i.e., only a part of the reality, but still a fundamental part.

After so much general and somewhat philosophical introduction, I turn to a brief survey of the concepts and axioms of economics as the specialized study of the conduct fitting the primary idea of "economy." The main subject matter of our science is organized economic relations in a society of free and instrumentally rational beings. Forms and uses of intelligence other than as instrumental to satisfying given wants are extraneous to the subject, and they are to be conscientiously ignored by this economist "as economist." Before taking up economic organization, a first main division of the study must deal with the economic conduct of an *individual*, abstracting from social relations. This in particular must be a highly "theoretical" analysis, dealing with selected elements in a hypothetical situation and neglecting others. All theory is abstract and more or less unrealistic; and this is strikingly true of analysis of motivated human behavior, and especially of individual conduct under such artificial conditions. To make the situation, the "model," seem at all real, one must postulate a man living in isolation, like the familiar Robinson Crusoe on his island, otherwise uninhabited by man (before the arrival of the cannibals and his "adoption" of the man "Friday"). Our imaginary Crusoe must be endowed with the essentials of (instrumentally) rational living. These will be "given" wants as ends, and given means or "resources," including his own bodily strength and skill, with some fund of technical knowledge, and some equipment of "tools," such as Defoe's hero rescued from his wrecked ship. We assume that from the start he must "produce" the direct means of satisfying his needs, not living (for any considerable time) on stores from his ship, or by casually "finding" what he consumes. We must

assume that he preserves the original situation, hence replaces any original instrumentalities as they are used up or wear out, using the visible resources of his environment; and at a first stage in the analysis, he is not to add to his total stock of equipment.

It is, of course, somewhat unrealistic to treat these stipulations as strictly "given" conditions of our man's activities. To be human, or even to live, our "economic man" must of course have grown up in a society with a culture of some kind, unspecified in detail, beginning his isolated life with much knowledge and various artifacts already produced. Controversy has raged chiefly around the nature of the "wants," but in fact the other data raise the same questions—all unanswerable in empirical-scientific terms. There is no clear distinction between means and ends, production and consumption, since choices in both fields involve comparison based on preferences. We abstract from the fact that real men do not know at all definitely what they want, and the want to explore and experiment, be advised, to make changes and even to be surprised, is as real as that for any specific good or service. The want for "food" does not tell us what food, and there is no assurance that what is procured and eaten will be nourishing, or even how far it will be pleasant to taste. But economic analysis must deal with complete instrumental rationality—the analogue of "frictionless conditions" in mechanics—abstracting from error and indeterminacy. Its categories apply only to conduct directed to correctly foreseen ends. Accordingly, we must "postulate" what is analytically valid but only partly "true," that our Crusoe, the unjustly scorned "economic man" will use diverse kinds of given resources, limited in supply, to create various products that will satisfy his numerous wants *on the whole* to the maximum degree—and at the same time will maintain (including replacement) his given stock of resources. If he does not do the latter, he will be "eating up his capital," impoverishing his future consumption—his "income" under the conditions here specified. A stock of resources subject to increase or decrease as a whole (and accordingly to change in their concrete form, with or without a change in quantity) is the meaning of "capital," one of the most crucial and most controversial of economic concepts. This holds for any economy which either produces or uses up durable goods. To make this clear is a major reason for giving

attention to the Crusoe economy. The concept of "production" in this connection is a special source of confusion since the replacement of anything that must be replaced to keep consumption constant is an integral part of producing what is consumed directly in satisfying any want. (Rigorously speaking, only services are finally consumed, since all goods are more or less durable and so in principle embody capital.)

The problem of the relation between wants and the means of satisfaction has two closely related aspects, centered in the fact that a rational ordering of consumption calls for the "best possible" proportioning of the different items consumed. In the interest of objectivity, a particular good (or service, having a time dimension) must be used to define a particular want, especially because a good as such and its service are subject to measurement, and the wants are not. Yet, as we noted in the case of wheat, the good is defined for measurement by its usefulness, so that the defining relation is mutual for the two. It follows—and indeed is obvious—that neither wants nor want-satisfying goods can be accurately defined or measured, at all. No list of them (in pairs) could be drawn up that would be exhaustive or made up of definite and distinct items.

The more serious problem—or at least more the subject of controversy—centers in stating the relation between the *magnitudes* of goods and of their satisfactions, so as to talk intelligently about a greater or smaller total and a "maximum" of satisfaction, of whatever it is that the consumer does maximize in making perfectly economic choices. It changes the order of exposition, but this problem is best discussed for a consumer in a price economy, not a Crusoe. For our analysis, he is to have a given money income with which to buy goods on the market at known prices, and is to proportion his expenditure "correctly." His comparisons require some psychological common denominator, defining the aggregate to be maximized, and "anticipated total satisfaction" is perhaps as good as any term available. As a motive, it must be anticipated satisfaction, since buying precedes consumption (though this is dubious psychology). "Utility" is more commonly used, but is no better analytically, and tends to imply objective desirability, and not merely desiredness, which must be avoided. The conventional treatment, introduced into economic literature with utility theory in the 1870's and accepted down to a generation ago, was that as additional

equal units of any good are consumed a decreasing increment of "utility" results from each unit, hence obviously the maximum total utility is secured when expenditure is so apportioned that these final or "marginal" units are equal (and the income is all spent). Much time passed before relations of complementarity or antagonism between goods were taken into account, but this requires only "noting" that these relations affect the quantitative relation between the increments of any good and resulting increments of total satisfaction; they do not affect the validity of the general statement.

More recent discussion of this "law of diminishing utility" has made a great "fuss" over the fact that with total expenditure constant, units of any one good are added through sacrificing units of some other or others, so that the choice is a comparison, and it is argued that the law should be stated in relative and not absolute terms, "coefficient of substitution" replacing marginal utility as dependent variable. The situation is described truly enough, but the argument does not settle the psychology, or the logic. It is not at all certain that the typical consumer in buying some amount of any good explicitly thinks of his expected satisfaction as defined and measured by any particular thing or things he is giving up, rather than against a vague sense of the value of money, or that he could consciously make the comparison without forming an idea separately of the magnitudes being compared. Logically, he may be held to equate "infinitesimals" rather than real increments, or as maintaining a smooth margin without comparing components; but the view is surely unrealistic psychologically. And it is more unrealistic to hold that one only "ranks" different combinations assumed to be formed in such terms, again without thinking of finite increments, i.e., of quantities in the cardinal and not merely the ordinal sense. The procedures come out to the same thing as the condition of a maximum and hence of equilibrium. Criticism of the older view comes from two sides; some economists object to the use of continuous functions or curves to represent variations which they hold are not really of that character—others insist on the reality having the character that is suited to logical presentation.

The same philosophical issue arises in the treatment of forces in mechanics. According to Newton's third law, and since one force is always measured by comparison with another, it can be

argued that they do not really exist separately. (It is immaterial here that satisfaction—or utility—cannot be measured, but only estimated subjectively.) But the validity of the principle of diminishing utility does not depend on choice being a comparison of different enjoyments. If other things are equal, specifically all other items in consumption, it is unquestionable that the capacity for enjoying any one good is satiable, that with increased consumption it will fall to zero and then become negative—whatever good is considered. That is, we do compare successive increments of the same kind. Economic analysis treats motives as mechanical forces, but they and their effects do not vary in accord with the same laws. It is misleading to hold that any force must be defined in relation to some other, even though a force, or a motive, cannot act apart from some opposition. As to exalting the "Occam's razor" principle, stressed in opposition, I note first that the ordinalist position is not really simpler, and that if one rigorously minimizes concepts he will come out at behaviorism, excluding all motivation and all economics (other than statistics of commodities, arbitrarily selected and defined). The adage reads, "*praeter necessitatem*," and what is necessary is a matter of judgment and convenience; there can be no economizing without ends, which are "metaphysical."

In dealing with the arbitrarily simplified individualistic psychology of a Crusoe, one can plausibly abstract from value-judgments and consider only subjective desires; but the theorist must be cautious in using the reasoning of function-and-variable, and treating maximum-satisfaction in mathematical terms as the economic objective. Theory on the analogy of mechanics, treating motives as forces, and as "given," is illuminating and unavoidable; but the analogy has severe limitations and must not be pressed too far. Some crudely empirical phenomena can also be usefully dealt with by statistical methods; but similar limitations apply—since men change their minds, which are vague at best—and there are other sources of error. Practical relevance sets limits to literal empiricism, since the postulates required for explanation and empirical prediction contradict those involved in decision making. The latter means *self-control*, which is not effected by applying "scientific method."

On the side of production a similar situation exists and the same formal reasoning applies—with the difference already noted, that output

magnitudes are "more" objective and measurable than satisfactions. A Crusoe's rational planning of production involves two stages. The first—the proportioning of resources in the production of a single good—is more objective, the principle of diminishing physical productive contribution of a single resource in a particular use replacing the diminishing marginal utility of a single consumption good. But in addition, different goods are produced with more or less different groups of resources, and in consequence the utility principle also enters into the variation of the value-product. Added increments of any resource will make diminishing additions to the physical output of any one good, and the increased output of the goods in which the resource figures more largely will diminish in utility in comparison with other goods. The theoretical equilibrium of maximum efficiency on the whole is that equal increments of every resource make equal contributions to the total value-product of the economy. (Monopoly is of course excluded for a Crusoe economy.)

Another major gain from considering the Crusoe hypothesis is that it avoids the complications due to the use of money in the real social economy. To make his decisions intelligently or to keep accounts, a Crusoe would have to use some unit of value. But its selection would be arbitrary, and the unit itself would not have value, or be subject to the changes in value ("purchasing power") that are inevitable for any unit, real or symbolic, actually serving as an intermediary in exchanges. This fact at once suggests the further and "supreme" advantage that in a Crusoe economy there is no borrowing or lending—even of physical goods for a rental, but more especially no lending of "money" at "interest." Reflection on this fact should dispose of the ("Keynesian") nonsense about interest being essentially a rent paid for the use of money—and of all confusion of money with capital, correctly conceived. To repeat, the capital concept has the same meaning for a Crusoe economy as for any other where goods (not merely services) are produced and consumed. Again, to make any decision rationally (or to keep accounts) a Crusoe would have to know the rate of yield both on his whole capital and on each type of resource in question. That means the total amount of income he could temporarily gain by under-maintenance, or would give up by making a further investment, divided into the perpetual yield, per unit of time, to be sacrificed in the one case and gained in the other.

Intelligent action will obviously make and keep the yield-rate uniform for all types of capital. The cost of any good, an accumulated amount of income, measures the quantity of capital embodied in it. And the value measure of capital underlies the meaning of interest as a "rate," a ratio between two magnitudes of the same kind—i.e., values—in contrast with the rent on a concrete asset. Assuming rational behavior, the imputed amounts of interest, and of rent, per unit of time, will be identical—and so would the payments, in a social economy where such payments are made.

Analytically, the annual rate-of-yield is the percentage rate at which an investment (and the yield itself, an annual rate of flow) would grow if the entire yield were constantly reinvested. Exact calculation involves the algebra of continuous compounding; that need not be explained here, but a constant percentage rate of growth, on a growing base, must be distinguished from growth at a uniform rate per time unit, regardless of change in the total to which it is added. An addition to investment will of course increase the total by the same amount, its cost, only if it is made "rationally," and if the previous total is not affected through measurement by capitalization at a yield-rate which changes while the new investment is taking place. In the market economy, the role of money in the borrowing and lending of capital is the same as in any other purchase and sale.

The rest of this paper will be given to some necessarily sketchy observations on what is called, or miscalled, "dynamic" economics, i.e., changes over time, with respect to a Crusoe economy. The changes in question are of course those affecting the conditions taken as given in the stationary-state or equilibrium analysis. They have been classified above under the three heads of wants, resources, and technology. In considering stationary conditions, the last might be included under resources, specifically the personal capacities or "labor power" of our Crusoe; but, as pointed out before, technology is not variably proportioned in combination with material factors, or different technologies with each other. In relation to change it is like other capital in that any addition or improvement is produced at a cost in the hope of earning a return; but technology is not regularly worn out or used up, hence does not directly call for maintenance or replacement, under stationary conditions, and a cost once in-

curred cannot be recovered through disinvestment.

The material factors conventionally distinguished—the laborer and durable goods, including “natural agents”—are also essentially “capital,” with differences in degree and in detail. A Crusoe, and in free society a laborer, can only be “owned” by himself, hence (in society) can only be leased, not bought and sold, or legally pledged as security for a loan; but this is irrelevant for a Crusoe economy. A more important distinction, which is relevant, is that a laborer’s maintenance of himself as a productive agent, a means, is practically inseparable from his consumption, the economic end. (A worker’s person is in much the position of property held in entail.) It should be evident that little economic validity attaches to any simple classification of “factors of production,” specifically the conventional one of three such factors. (Or four, if entrepreneurship is treated as a factor, which is often done, but fallaciously, as will be pointed out in Part II of this article.)

The prevalent use of the word “dynamics” for the treatment of progressive economic change is a misnomer—and it has limited validity in relation to fluctuations, but that branch of theory will not be taken up in this article. On the analogy of mechanics, where the term has a definite meaning, “dynamics” would refer to the action of forces tending to establish or maintain equilibrium, and to the speed and path of such changes, under given framework conditions. Since in economics these magnitudes cannot be measured, no treatment at all scientific is possible, and in fact the same is hardly less true of cumulative changes. The one such change, or aspect of change, that can be at all realistically interpreted in terms of economic forces (motives) is

saving and investment, creating additional capital, with changes in its forms (the capital-goods involved, which include all durable agents) in response to changes in other conditions.

It is reasonable to suppose that our isolated economic-man might save and invest, to increase his future income, without changes in his wants or accidental discovery or invention, or decrease in his productive capacity. Deliberate creation of new knowledge would be an investment in technology differing as production from making additional goods of familiar kinds chiefly in the amount and kind of uncertainty involved. It hardly seems realistic for an individual to invest in changing his own wants—though in society much is done to change those of others, or to prevent their changing. Men do invest to increase their internal productive ability, though analysis must abstract from limitations of foresight and measurement, and the role of objectives other than economic output. In society, sentimental attitudes oppose treating the production of human beings or equipping them for economic functions as investing for a return—with some exception for professional training, and some interest by economists in the yield on the costs of child rearing and education; but only that aspect can be handled with the tools of economic analysis. Thus the general principles of saving and investment, already stated, cover what it seems appropriate to say about cumulative change or progress in a Crusoe economy. Besides being highly unrealistic, the analysis leaves many proper theoretical questions unanswered. But unnecessary duplication will be avoided by leaving such of these as can be dealt with in the scope of this article for consideration in connection with the second main division of the treatment, dealing with economic organization.

THE POPULATION PROBLEM: YESTERDAY, TODAY, TOMORROW*

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"The principal object, however, is not to possess a superfluity of men, but to render such as we have as little unhappy as possible."

Voltaire, in *Philosophical Dictionary*

It is my intention, in this paper, to contrast the way in which the population problem is envisaged today with both the way it was envisaged in Malthus's day and the way it may be envisaged 50-75 years from now.

I. THE MALTHUSIAN ERA

In Malthus's time the rate of population growth was much lower, in all but some of the newly settled parts of the world, than it is today. For, though natality was quite high in all classes, it usually was counterbalanced by high mortality, a mortality often double what it is today. The prevailing age structure was that associated with high-fertility, underdeveloped countries. Populations, among them Europe's, remained coiled, potentially capable of high rates of natural growth; and the rate of natural increase itself was moving upward slightly in many countries. That drift to the towns and cities which was eventually to generate a decline in gross reproduction was just getting under way, while that great movement of people from Europe to the New World which was variously to ease population pressure had barely begun.

Even Malthus's ideological world was at times uncongenial to a reasoned optimism. A naturalistic, matter-of-fact view had not yet become dominant among students of population. The very word "economy" still denoted (*inter alia*) the divine scheme, or the divine government, of the world. The universe was still conceived of in teleological terms. The world, having been created for man's benefit, had been endowed with purpose by its Creator even as had man's passions (though they always stood in need of control by Reason). Thus Malthus believed the "constant tendency in the human race to increase beyond the means of subsistence" to be essential to the

peopling of the world, to the overcoming of that "state of sloth . . . natural" to man, and to the formation of character through control of the relevant passions.¹

Though the density of agricultural population in Western Europe in the early 1800's was barely one-third that encountered in present-day underdeveloped Asia, land was assigned the preponderant role in the Maltho-Ricardian conception of man's economic universe. It was land that set limits to population growth and dominated the manner in which output tended to be distributed. Mineral and non-mineral resources were assigned minor parts, along with technology and technological progress. Durable goods and fixed capital were looked upon as much less important than non-durable goods.

The population problem, as Malthus envisaged it, had its origin in the fact that output elasticity supposedly was doomed eventually to move downward whereas population elasticity was expected to remain in the neighborhood of unity. As a result, the probability that per capita income would rise appreciably was not great in most countries; in some, in fact, a fall in average income was more likely.

The prospect, as Malthus foresaw it, thus was conditioned by the fact that in his system agricultural production played the major role. Provisions constituted a large fraction (say two-thirds) of household budgets and hence of output; and they would form an even greater fraction, should population growth be accompanied by falling real wages, since food could not be replaced by other budgetary components.² Agri-

¹ *An Essay on the Principle of Population*, with introduction by G. T. Bettany, London, 1890, pp. 52, 290, 441, 446, 448-55, 545-47.

² T. R. Malthus, *The Nature and Progress of Rent* (1815), reprinted with introduction by J. H. Hollander, Baltimore, 1903, p. 42. K. F. Mather has estimated that in the early 1800's four-fifths or more "of all the things men used were derived from the plant and animal kingdoms" whereas today no more than 30 per cent of the "things used in industrial countries" come from "things that grow." See his *Enough and to Spare*, 2nd ed., New York, 1944, p. 55.

*I am indebted to C. B. Hoover for helpful suggestions.

cultural production was subject to diminishing incremental return; it was not experiencing, as was the production of "some of the *conveniences* and *luxuries* of life," those "quite astonishing" effects which, "in civilized and improved countries," accompanied "the accumulation of capital, the division of labour, and the invention of machinery." The "effects of these causes . . . are very much less efficient in producing an increase of food."³ Malthus inferred, therefore, that an arithmetical ratio might be employed to describe the course of agricultural output in tolerably "well peopled" countries; there its rate of increase would gradually fall from 100 per cent in a postulated initial 25-year period to 12½ per cent in the eighth such period, yielding a compound rate of just over one per cent for the whole 200-year period. Only in fertile, sparsely peopled lands might the growth of agricultural output keep pace for some decades with what Malthus considered a realizable maximum population growth rate, namely, about three per cent.⁴ In quite densely settled lands, however, little or no increase in agricultural output might prove realizable.⁵ It followed that the growth of aggregate output would be dominated by that of produce, since, with produce forming so large a fraction of total output, the tendency of agriculture to diminishing output per worker could easily more than offset those forces making for increase in output per worker in non-agricultural branches of production.⁶ Malthus there-

fore concluded that the average man's lot would get worse in some countries and might fail to progress in others in which the food supply increased very gradually; at best man's lot could improve only very slowly.⁷

The possible implications of technical progress, capital accumulation, and easy importation, together with a decline in the importance of domestic agricultural production, Malthus largely disregarded. He did this presumably because he regarded their salutary impact as unimportant or transitory.⁸ After all, he lived at a time when per capita income was rising very slowly, or at least was supposed to improve very slowly when it actually did improve. Adam Smith had reported sustained improvement, but at a very low rate. Authors of utopias in and before Smith's century usually had anticipated only minor improvements in average income, with the result that they usually advocated greater equality in the distribution of such income as was available.

Because of the limitations land scarcity imposed upon the augmentability of produce, Malthus found it necessary to emphasize checks to population growth. He posed the fundamental problem in quasi-equilibrium terms. Since labor, together with capital and technical progress, could not make the output of landed products increase as rapidly as population was normally capable of increasing, the growth of population would necessarily be restrained by checks, of which some assumed the form of mortality and others that of barriers to reproduction, and of which most were variously connected with scar-

³ Malthus, *A Summary View of the Principle of Population*, London, 1830, reprinted in D. V. Glass, ed., *Introduction to Malthus*, London, 1953, p. 145; also Joseph Stassart, *Malthus et la population*, Liege, 1957, pp. 89-97.

⁴ *Ibid.*, pp. 129, 138-43, 151; *The Nature and Progress of Rent*, p. 38; *An Essay on the Principle of Population*, pp. 3-5, 285-90, 348-85, 387, 430, 439; *Principles of Political Economy*, 2nd ed., London, 1836, pp. 195-96.

⁵ *Essay*, p. 5. "From the accounts we have of China and Japan, it may be fairly doubted whether the best-directed efforts of human industry could double the produce of these countries even once in any number of years." *Ibid.*, p. 5; also Bk. III, chap. 13, where he argues that an advance in wealth does not necessarily entail an advance in output of produce. See also *ibid.*, pp. 294-95, where it is noted that the standard of life sometimes is reduced by population growth.

⁶ In 1812 in England and Wales the average yield of wheat per acre was 22 bushels, but the yield of marginal land was only about 8 bushels. See Colin Clark, *Conditions of Economic Progress*, 2nd ed., London, 1951, pp. 225-26. Rents had risen

greatly. See Kenneth Smith, *The Malthusian Controversy*, London, 1951, pp. 82-84.

⁷ For example, while he believed that America might support 50 times her then population, he supposed that her "labourers will in time be much less liberally rewarded." *Essay*, pp. 294, also 284 ff., 295, 387. England might "in the course of some centuries contain two or three times its present population, and yet every man in the kingdom be much better fed and clothed than he is at present"; and yet he supposed this would require "extraordinary exertions." *Ibid.*, pp. 360, 461; also p. 5 and next note.

⁸ *Ibid.*, pp. 371-78, 384-86, 438-39. But see also *Summary View* (in Glass, *op. cit.*, pp. 139-40, 151-52) where Malthus said that given sufficient capital formation and conditions favorable to demand, the population of many large countries might increase 10-100 times "and yet all the inhabitants be as well provided for as they are now."

city or fear of scarcity of the means of existence.⁹ Man was confronted by a simple choice; he could voluntarily control his numbers (though Malthus preferred this control to be exercised almost exclusively through practice of moral restraint), or his numbers would be automatically controlled by checks flowing largely out of an income-reducing pressure of unregulated numbers upon the limited means available for their support.¹⁰

Malthus's discussion of checks was defective in several respects, however. (1) He usually failed to appreciate, probably on ideological grounds, what he had clearly recognized in his first *Essay*, namely, that in his models population elasticity was so high because birth control was virtually ruled out.¹¹ (2) He failed to resolve his checks into their more elementary components and specify these with care. Consequently he was unable to associate these checks closely with their social and economic correlates; nor, despite his attempts to classify the checks (e.g., as positive or preventive, etc.), was he able to describe in detail how any particular check was substituted for another. (3) He failed to distinguish between endogenous and exogenous checks; that is, between checks which were closely connected with changes in real or prospective income (or with changes in income composition) and checks which were connected only remotely, if at all, with these dimensions of income. It is true that he noted that the stimulus given to population growth by an increase in a nation's aggregate output depended both upon the extent to which this increase consisted in means of subsistence and upon the degree to which these means were distributed to the laboring classes, principally in the form of remuneration for work done. But he failed in general to distinguish carefully between the response of endogenous and that of exogenous checks to population growth.¹² (4) Malthus failed to ap-

preciate the degree to which man's subjective apparatus—his values, aspirations, sensitivity to changing circumstances—might intervene and reduce population elasticity. His analysis of moral restraint, etc., indicates that while he counted almost entirely upon modification of man's subjective apparatus, he underestimated the consequences of its modifiability, largely because he ruled out contraceptive practices and neglected to analyze household behavior in decision-making terms.¹³

What was needed, Malthus usually emphasized, was improvement in a people's habits—in its subjective and objective living standards;¹⁴ for population would grow so long as real wages, or family income, exceeded the amount of support families required, "under the existing habits of the people," to replace themselves.¹⁵ Such improvement would, of course, augment resources and productive capacity as well as the inclina-

⁹ E.g., he did not inquire carefully into the operation of the process of habit-formation in the working class; or into when an increase in a worker's income served to increase his subjective standard of living; or into the extent to which incentive to limit family size was blunted by the smallness of the cost of supporting children, and by the fact that no one household's practice of family limitation could significantly affect wages. Malthus's treatment of the checks has been criticized by Kingsley Davis, in "Malthus and the Theory of Population," in P. F. Lazarsfeld and Morris Rosenberg, eds., *The Language of Social Research*, Glencoe, 1955, pp. 540-553; D. E. Eversley, *Social Theories of Fertility and the Malthusian Debate*, Oxford, 1959, pp. 235-56. For a particularly careful assessment, however, see Anthony Flew, "The Structure of Malthus' Population Theory," *Australasian Journal of Philosophy*, XXXV (1957), pp. 1-20.

¹⁰ E.g., see *Essay*, pp. 294, 360, 461, 551; *Summary View*, in Glass, *op. cit.*, pp. 151-52; *Principles of Political Economy*, London, 1936, pp. 250-60, 312-13.

¹¹ *Principles*, pp. 215, 224-31, 280; *Essay*, pp. 339-40, 386-87, 426-28. Malthus emphasized not real wage rates but annual real family income, since this depended upon the fullness of employment as well as upon real wage rates, and since family income therefore could rise even though real wage rates fell slightly. *Ibid.*, pp. 426-28. Real wages, Malthus stated, had hovered around a peck of wheat per day for five centuries; they were at this level before 1790 and around 1810-11, but slightly below it in 1790-1811 when employment was full. *Ibid.*, p. 428; *Principles*, pp. 250-60, 312-13.

⁹ E.g., see *Essay*, pp. 2-14, 140-41; also S. M. Levin, "Malthus' Conception of The Checks to Population," *Human Biology*, X, 1938, pp. 214-34; also Joseph Stassart, *Malthus et la population*, pp. 98-131.

¹⁰ *Essay*, Bk. I, chap. 2; Bk. IV, chaps. 1-2, 5, also pp. 559-60.

¹¹ On Malthusian controls see Glass, *op. cit.*, pp. 25-50.

¹² E.g., see *Essay*, pp. 426-28; also my "Malthus's Total Population Theory—A Restatement and Reappraisal," *Canadian Journal of Economics and Political Science*, XI (1945), pp. 87-100.

tion to be prudent;¹⁶ it could be brought about through appropriate modification of a society's institutional, price, and class structure. Thus, were the price of produce to rise relatively to that of conveniences and luxuries, man's motivation to work would be strengthened as would his disposition to be prudent.¹⁷ Similar effects would be consequent upon growth in the relative importance of the middle class and the increased diffusion of its prudential habits and tastes.¹⁸

Malthus's views respecting demand for labor, difficulties attendant upon increasing agricultural output, and the need of the working class to improve its habits are reflected in his discussion of England's population upsurge. He attributed the increase in England's annual rate of population growth—supposedly from below one per cent shortly before 1800 to about 1¼ per cent during the 15 or so years succeeding 1800—to “a greatly-increased demand for labour, combined with a greatly-increased power of production, both in agriculture and manufacture.”¹⁹ But he declared that this rate “in the nature of things cannot be permanent.” He did not, however, show how wages might respond to such an increase in rate of growth, or explain in detail how the English rates of growth would be reduced.²⁰ Undoubtedly, he was impressed by the longer-run aspect of the relation between current wages, population growth, and future wages. An increase in wages consequent upon “a sudden

increase of capital and produce cannot effect a proportionate supply of labour in less than sixteen or eighteen years,” since only after such an interval would an increment in the rate of natural increase become an increment in the rate of increase of the labor force.²¹ Presumably, therefore, reliance needed to be put in habit change rather than in anticipation of a wage decline.

II. TRANSITION TO TODAY

Malthus's views regarding checks, productive capacity, and prospects were promptly subjected to extensive and often very effective criticism. By the 1830's, therefore, his doctrine had gone into eclipse. Economic indicators revealed improvement in the economic condition of much of the population of England and Western Europe if not in that of the non-European world about which little was known. Moreover, the pace of change seemed to be increasing. Barriers to agricultural productivity appeared to be receding. Malthus's counsel respecting exclusive reliance upon “moral restraint” was dismissed. Instead it was variously asserted that prudential controls tended to increase in effectiveness as a society progressed, and it was noted that such increase in natural growth as had occurred was traceable to a decline in mortality rather than to an increase in natality evoked by improvements in income. In short, while it was considered essential that “capital” be made to outstrip population, it was found that this was being done, and that the population problem, though seldom wholly absent, was not a cause of immediate concern. Some even began to take for granted higher rates of improvement than Adam Smith had anticipated.²²

The position just outlined was not that of J. S. Mill, nor that of Alfred Marshall. Each attached greater weight to the population problem than did those writing during the initial period of strong and unfavorable reaction to Malthus. In a sense, therefore, they kept dis-

¹⁶ E.g., abolition of the poor laws would increase both the will and the power of the common people to save. See *Essay*, pp. 343-44, 565-66; also *Summary View in Glass*, *op. cit.*, p. 152. Poor relief often diverted capital from productive uses. *Essay*, p. 349.

¹⁷ See *Essay*, Bk. III, chap. 12, p. 419; *Principles*, pp. 320-21; also my “Malthus the Malthusian vs. Malthus the Economist,” *Southern Economic Journal*, XXIV (1957), pp. 1-11. Despite his qualifications in particular cases, Malthus looked upon freedom of trade as “most advantageous” to Europe as a whole. *Essay*, p. 415.

¹⁸ *Ibid.*, pp. 535-37, on the prudence-generating influence of both growth of the middle class and decline in the relative prices of conveniences and luxuries adapted to mass consumption. Even so, if Jacob Viner's interpretation is correct, Malthus favored establishing “enclaves of privilege” for persons recruited from “sections of the population which could be relied upon not to absorb increases in income wholly in natural increase of population.” See Viner, *International Trade and Economic Development*, Glencoe, 1952, pp. 128-29.

¹⁹ *Essay*, pp. 243-44, also 227-29.

²⁰ *Ibid.*, pp. 243-44, 227-29, 247, 260.

²¹ *Principles*, p. 280.

²² E.g., see Kenneth Smith, *op. cit.*; Mark Blaug, *Ricardian Economics*, New Haven, 1958, pp. 102-119, 129-34, 182-87, 227-29; S. Ambraman, *Malthus and Classical Economics*, Bombay, 1959, Part II; Eversley, *op. cit.*; also H. A. Boner, *Hungry Generations*, New York, 1955. In the course of the nineteenth century the comparative importance attached to particular “checks” changed. E.g., see Eversley, *op. cit.*

cussion of this problem alive at a time when post-1850 continental writers were playing down its importance, only to revive it late in the century.

Five of the points made by J. S. Mill deserve note here. (1) He re-emphasized that form of Adam Smith's division of labor, denominated "complex co-operation" by E. G. Wakefield, whereunder persons in different employments and regions co-operate. He thus focused attention on the importance of division of labor, a process neglected by Malthus but emphasized by some of his critics.²⁵ In so doing Mill introduced into population analysis what came to be called "increasing return," a process whose content has always been less clearly defined than its reputed effects; and he noted that, within limits, a large rather than a smaller population was essential to its full realization. (2) Unlike Malthus, he found in international migration and investment a means whereby population pressure and a plethora of capital might be partially relieved in land-short and resource-poor lands, such as Britain could become, and these might be enabled to draw needed foodstuffs and raw materials from abroad. (3) In keeping with his utilitarian premises, Mill indicated that further population growth was of no advantage to mankind when, as was true of "all the most populous countries," all "the advantages both of co-operation and social intercourse" had "been attained." A population of such size was, in modern terms, optimum. Moreover, the magnitude of the optimum was comparatively stationary; it was no longer expanding as Cannan was later to argue. (4) Mill enunciated the view that, as a rule, a shock, together with a sustained improvement, was essential to free a people or a class from what is now called a high-fertility, low-income-level Malthusian equilibrium; only then could a people become habituated to a heightened standard of life and be made sufficiently inclined to guard it by regulating fertility.

When, indeed, the improvement is of this signal character, and a generation grows up which has always been used to an improved scale of comfort, the habits of this new generation in respect to

population become formed upon a higher minimum, and the improvement in their condition becomes permanent. Of cases in point, the most remarkable is France after the Revolution.²⁶

(5) Mill recognized the essentiality of birth control and the possibility that, despite Malthus's warning to the contrary, "communism" might be the form of political organization most unfavorable to overpopulation.²⁷ Mill also recognized the essentiality of change in social structure to the decline in natality, but he was not so explicit in respect of the changes required, in part because he, like other mid-nineteenth century writers, failed to anticipate the extent to which urbanization would be accompanied by a strengthening of anti-natality values, aspirations, conditions, etc.

Marshall, ever a believer in Leibnizian gradualness and the cumulative character of change, always remained concerned lest continuing growth of numbers and urban crowding finally check improvement in the common man's lot, of the extent of whose progress in his own lifetime Marshall was quite aware. For he looked upon this improvement as possibly but the product of an historical stage during which constant returns in agriculture had been happily but only temporarily combined with increasing returns in a variety of non-agricultural activities.

In the present age, the opening out of new countries, aided by low transport charges on land and sea, has almost suspended the tendency to Diminishing Return, in that sense in which the term was used by Malthus and Ricardo.... And yet, if the growth of population should continue for very long even at a quarter of its present rate, the aggregate rental values of land for all its uses... may again exceed the aggregate of incomes derived from all other forms of material property.²⁸

²⁵ *Principles of Political Economy*, edited with introduction by W. J. Ashley, New York, 1921, pp. 348-49; also 116-31, 700-03, 750-51. For a fuller account see my paper on Mill in B. F. Hoselitz, ed., *Theories of Economic Growth*, Glencoe, 1960.

²⁶ *Op. cit.*, pp. 206-07.

²⁷ *Principles of Economics*, 8th ed., London, 1920, pp. xv-xvi. The improvements in living standards of which Marshall was aware are reflected in the increase in the size of minimum real incomes deemed socially adequate for individuals and families. See Helen H. Lamale, "Changes in Concepts of Income Adequacy over the Last Century," *American Economic Review*, May 1958, pp. 291-99.

²⁸ E.g., see Smith, *op. cit.*, pp. 58, 118-19, 147, 160, 191, 227, 229. Malthus, as noted earlier, asserted that division of labor, etc., was much less effective in agriculture than in other branches of the economy. See *Summary View*, in Glass, *op. cit.*, pp. 145-46.

Land therefore could come into its Malthusian own again; and so presumably could other potentially limited factors.

The role of changing age composition was slow to be noticed. It is true that Malthus noted the importance of the number of adults, and that, believing lowness of the rate of population growth to be inevitable because of the diminishing augmentability of the food supply, he advocated a combination of low natality with low mortality instead of one of high natality and high mortality.²² He thus favored a "transition from a high birth-high death rate population economy" to one of low rates, a transition that, in Parson's words, "is one of the profoundest adjustments human societies have ever had to make, going as it does to the deepest roots of motivation."²³ It was principally in France, however, where gross reproduction had been falling ever since 1800 or earlier, that empirical evidence of improvement in age composition was noted. So appreciation of the significance of this aspect of population structure had still to wait, as did the role of investment in fixed and personal capital, to receive due attention.

The first half of the present century witnessed three main shifts in demographic opinion. Immediately after World War I the persuasive pen of J. M. Keynes alerted the Western World to the supposedly impending threat of income-depressing population pressure, and various writers rediscovered Malthus's geometrical ratio and the ill-boding implications of compound growth.²⁴ Within a few years, however, this concern was replaced by another, largely aroused by Keynes's new theory and Robert Kuczynski's calculations. Men now become alarmed lest the continuing decline in the rate of growth, revealed by both crude and refined measures,²⁵ would unduly de-

press the rate of investment and make for underemployment.

Finally, during and after World War II, alarm began to be expressed that a population explosion might be impending. Observers had become aware that fertility had not fallen below its century-old levels outside Japan and the predominantly European sphere of civilization whereas mortality had everywhere diminished remarkably under the impact of Western practices, even in lands where as yet little economic improvement had taken place. It was noted also that in a number of Western countries natality had increased very greatly. So, for the third time, the geometrical ratio was rediscovered and found to be as bodeful as ever, though emphasis now was placed not on depressing absolute per capita income but on depressing its rate of growth.

III. CONTEMPORARY POINTS OF EMPHASIS

At least nine points are dwelt upon in present-day discussion of the population question: (1) the significance of age composition; (2) population growth and the absorption of potential fixed and personal capital; (3) technological progress and increasing return; (4) the decline of land and natural resources in relative importance; (5) the impact of variation in population growth rates upon the level of employment; (6) economic flexibility and rate of population growth; (7) population growth and economic development in backward areas; (8) population optima; (9) fertility determinants and their socio-economic correlates. The empirical implications of these points turn, of course, upon the lands to which they are applied.

It may be noted parenthetically that one point assigned great importance in the Maltho-Ricardian theory of population and distribution, namely, a pronounced tendency on the part of returns to labor-capital inputs in agriculture to decline, is no longer considered very significant. Other distribution-influencing forces have taken over, though the explanatory models employed sometimes still reflect the fact that distributive theory was born in an era when agricultural productive capacity was deemed to be quite inelastic and produce loomed large in the living patterns of most households.

(1) Changes in age composition are significant because of their impact upon potential per capita productivity, upon the structure of de-

²² *Essay*, pp. 229-230, 547, 549, 566.

²³ Talcott Parsons and Robert F. Bales, *Family, Socialization and Interaction Process*, Glencoe, 1955, p. 6.

²⁴ Some of the literature is cited in my "The World's Hunger—Malthus, 1948," in John A. Krout, ed., *Food, Proceedings of the Academy of Political Science*, January 1949, pp. 55-61. See A. B. Wolfe's paper, reprinted in Joseph J. Spengler and Otis Dudley Duncan, eds., *Population Theory and Policy*, Glencoe, 1956, pp. 55-60.

²⁵ On these measures, etc., see F. G. Boudreau and C. V. Kiser, *Thirty Years of Research in Human Fertility: Retrospect and Prospect* (Milbank Memorial Fund), New York, 1959.

mand, and upon a people's capacity to supply educators. The most important source of such change is change in gross reproduction. Suppose we hold life expectancy at birth constant at 40-70.2 years and start with a Gross Reproduction Rate of 2.5 (that is, with natality roughly in the 38-41 range) and then postulate a decline to 1.5 or less (that is, to a natality level of 22-23 or lower). The fraction of the population in the 15-59 group will increase 11-12 per cent or more. Or again, suppose we postulate stable populations with life expectancy at birth of around 45.7 and around 67 years, respectively. In the former population the fraction aged 15-64 will be about 17 per cent higher when the population is stationary than when it is growing 2 per cent per year; in the latter population, the corresponding margin will be about 11 per cent. What these figures signify in terms of superior productivity depends upon both labor-force participation by age and productivity of employed worker by age, and these in turn vary with local conditions. The figures suggest, however, that potential per capita productivity is at least one-tenth greater under *ceteris paribus* conditions when a population is about stationary than when it is growing around 2 per cent per year.²¹ Comparison of the actual age structure of low-fertility Europe's population with that of the underdeveloped world indicates the former to be around one-eighth more productive than the latter under *ceteris paribus* conditions.²² An increase in gross reproduction, as post-1940 American experience corroborates, diminishes potential productivity per capita.

Migration and the prolongation of life expectancy at birth exercise much less influence upon the age structure than does great variation in gross reproduction. Migration, sometimes important in the nineteenth century, has become

too small in volume. An increase in the expectation of life at birth from 40 to 60.4 would reduce the relative number aged 15-59 about 5 per cent. The accompanying improvement in health and the ability to work regularly would, however, probably offset the effect of this increase in life expectancy; so it may be disregarded. This effect would be offset also, if gross reproduction fell by 0.5 points.²³

While capacity of a nation to educate its youth and thereby increase future productive capacity depends upon many circumstances, especially upon the surplus of time and resources appropriate for this purpose, it is conditioned by the age structure of the population. One may, for example, compare the population under 15 or under 20 with the population of "productive" age. A decline in gross reproduction from 2.5 to 1.5 results in an increase of over one-half in the ratio of persons 15-59 to those under 15. It rises from 1.35 to 2.22, given an expectation of life at birth of 50 years, and from 1.20 to 1.97, given one of 70.2 years.²⁴

(2) With increase in the importance attached to durable goods and fixed capital, the cost of population growth in terms of capital came to command greater attention. While estimates of this cost can be made for given countries—several years ago it was put at \$12-13 thousand dollars per cross-sectional person added to the Canadian population—, it is difficult to translate these costs into internationally comparable terms. One crude method of doing this is to allow for the inputs that must be set aside to maintain the current wealth-population ratio, conventionally measured. On the assumption that the wealth-income ratio, conventionally measured, is at least 3 or 4 to 1, we may put at not less than 3 or 4 per cent of the national income the amount of inputs that must be incorporated into wealth, conventionally measured, to maintain the current wealth-population ratio when a population is growing one per cent per year; this requirement would then become 6-8 per cent, given population growth of 2 per cent per year. The inputs thus invested might otherwise have been used to increase the per capita wealth of the existing population.

This approach is somewhat misleading, of

²¹ United Nations, *The Aging Of Populations And Its Economic And Social Implications*, pp. 26-28; F. Lorimer, "Dynamics of age structure in a population with initially high fertility and mortality," *Population Bulletin* (of United Nations), No. 1, December 1951, p. 32; also unsigned, "Some quantitative aspects of the aging of western populations," *ibid.*, pp. 42-57.

²² United Nations, *The Future Growth of World Population*, New York, 1958, pp. 34-35. See also H. Leibenstein, *Economic Backwardness and Economic Growth*, New York, 1957, pp. 220-228, 249-50; D. J. Bogue, *The Population of the United States*, Glencoe, 1959, pp. 101-116.

²³ See United Nations, *The Aging of Population*, pp. 26-27.

²⁴ *Ibid.*, pp. 26-27.

course, in that it does not allow for variation in the wealth-income ratio. This ratio varies with the composition of wealth. It will fall if wealth composition takes on a more productive orientation. It will fall also if the quality of population is improved through education, if there is technical progress, or if there are returns to scale. In general, therefore, per capita income, conventionally measured, is quite likely to rise even though the wealth-population ratio, conventionally measured, remains unchanged.²⁰ Nonetheless, the assumption of a ratio of 3 or 4 to 1, especially if coupled with allowance for technical progress, provides a good rule of thumb.

(3) Nineteenth-century classical economists and many of their neo-classical successors greatly underestimated the role of technical progress, together with that of the various additional sources of input-economy included under the heading of "increasing return." They also greatly underestimated the qualitative improvements realizable, at least so long as a society is underdeveloped, through investment in education of the human factor, with which the generation and the diffusion of technical progress are closely associated. While technical progress and education absorb capital, they ease, or may ease, difficulties consequent upon population growth, particularly if the capital cost entailed is low, or if the improvements in question have already been tested abroad. Their effects are distinguishable, of course, from economies of scale evocable largely through increase in size of labor force as well as from those traceable to mere increase in aggregate income. Mill, it will be recalled, anticipated no further economies from increase in size of population whereas Cannan and others did. Such economies stand out, of course, in underpeopled lands, especially in Canada, Australia, and much of Latin-America and Sub-Sahara Africa.

(4) Perhaps the greatest change in point of emphasis between Malthus's time and the present has been the decline in the relative importance of land and organic products and, there-

fore, in that of "natural resources" as a whole. Some scientists, full of confidence in modern alchemy, almost rule Nature out of the picture, denying that there exists any essentially non-augmentable agency of production, the negligible growth of which restricts economic growth in general, or the fixity of whose rate of supply must eventually give rise to diminishing incremental returns to agents used co-operantly with this agency. As a result, some students dismiss the drag of resource shortage as unimportant, perhaps because they generalize illicitly from recent experience.

Two forces have operated in combination to bring about this change in expectation. First, man's habitat has come to be viewed as consisting in chains of actual or potential substitutes under the governance of ever better informed molecular engineers: whence a productive function performed by any particular lump of matter can be performed almost as satisfactorily by some other lump. There may be a limit to the stock of accessible matter of all sorts considered together, but there is none to the stock of diverse species of lumps capable of performing any particular productive function. Up to now technical improvements, together with the substitution of other inputs for land, has reduced the input of land service per unit of organic output in some countries and, on occasion, has reduced the pressure of numbers upon agricultural resources. Analogous improvements have permitted economies in the use of raw materials and have prevented increases in the cost of production of inorganic resource-inputs, or have reduced such costs, even though the margins of extraction have been extended. Therefore, inorganic resource-costs per unit of output have not risen.²¹

Second, economy in the use of resource-services has been supplemented by the fact that the marginal propensity to consume renewable organic products is low, with only that of some non-renewable inorganic resources being around

²⁰ For capital-output and wealth-population data, together with models based thereon, see Colin Clark, *The Conditions of Economic Progress*, London, 1957, chap. 11, and reports in the United Nations (ECAFE), *Economic Bulletin for Asia and the Far East*, IX, No. 1 (1958), pp. 17-31, X, No. 1 (1959), pp. 33-40.

²¹ See T. W. Schultz, "Land in Economic Growth," in H. G. Halcrow, ed., *Modern Land Policy*, Urbana, 1959; The President's Materials Policy Commission, *Resources for Freedom*, II, Washington, 1952, pp. 180-84; J. L. Fisher and Edward Boorstein, *The Adequacy Of Resources For Economic Growth In The United States*, Study Paper No. 13, prepared for the Joint Economic Committee, Congress of the United States, December 16, 1959, p. 43.

or above unity. Accordingly, while the per capita consumption of organic resources increased somewhat and that of inorganic materials trebled between 1900 and 1950, the ratio of the consumption of raw materials to GNP fell from 0.27 in 1900 to 0.13 in 1950. The relative importance of minerals has increased, of course; with gold excluded, the percentage minerals formed of all raw materials rose from about 9 in 1900 to about 29 in 1950. What the longer-run future may have in store is touched upon below.

(5) The impact of shorter-run variations in the rate of population growth attributable primarily to variations in fertility¹⁵ needs to be distinguished from that of long-continued movements from one fairly stable level to another. In either instance, of course, the response of the economy will be conditioned by ruling institutional arrangements (e.g., income-tax rates and rate-structure, social security provisions), by the current state of other determinants of the level of economic activity, and possibly by whether the population is below or much above optimum size. A long-continued movement (e.g., a fall in fertility of the sort experienced in 1920-40) tends to produce changes through the medium of the accelerator which short-run variations can hardly set in motion.¹⁶ It may also necessitate quite major changes in the structure of consumption and production, in the pattern of savings and offsets thereto, and in the ratio of inflationary to deflationary forces; and it may significantly affect the propensity to innovate.

Shorter-run variations produce changes of the sort associated with longer-run movements; but they are less intense and they do not persist. Among the economically significant dimensions affected one may include: the *ex-ante* savings-investment ratio; business expectations; com-

position of consumer and capital requirements and of increments to a nation's stock of physical assets; structure of effective demand; potential demand; the availability of savings for particular purposes; the ratio of persons of productive age to the population; the ratio of consuming-units to producing units within the households; and eventually a change in the ratio of persons newly entering the labor force to those departing it. These changes are incident upon one or more of the three main sets of economic decision-makers in an economy, namely, upon households, private entrepreneurs, and agencies of the state. The possible effects of these changes are best assessed, therefore, in terms of the response each of these decision-makers is likely to make or may make to the changes incident upon him, together with the interrelations of these responses. The significance of some of these changes depends, of course, upon the extent to which short-run population movements prove predictable and experience is accumulated respecting the response-behavior of the decision-makers.¹⁷

(6) Today, in historical studies as well as in explanatory models, considerable attention is being given to the role played by population movements in economic growth. Some writers, in fact, believe that population growth plays a catalytic, strategic, and hence accelerative role in some though not necessarily in all situations.¹⁸ It is taken for granted that population growth, when great enough, reduces the likelihood that, under conditions of full employment, *ex-ante* savings would exceed *ex-ante* investment.¹⁹ It has

¹⁵ Some of these matters are touched upon in A. J. Coale, ed., *The Interrelations of Demographic and Economic Change*, Princeton, 1960; also Erich Streisser, "Population Change and Economic Growth," *Zeitschrift für Nationalökonomie*, XVII (1957), pp. 332-40.

¹⁶ "One cannot repress the thought that perhaps the whole Industrial Revolution of the last two hundred years has been nothing else but a vast secular boom, largely induced by the unparalleled rise in population." See J. R. Hicks, *Value and Capital*, 2nd ed., Oxford, 1948, p. 302. But cf. N. Kaldor, "A Model of Economic Growth," *Economic Journal*, LXVII (1957), pp. 614-21. Joseph S. Davis has elucidated in a number of papers how population growth does or may stimulate economic activity.

¹⁷ E.g., see Roy Harrod, "Les relations entre l'investissement et la population," *Revue économique*, X (1955), pp. 356-67; also Coale's paper, in Coale, ed., *op. cit.*

¹⁸ Increasing confidence in the ability of governments to prevent serious declines in family income has reduced the sensitivity of gross reproduction to change in phase of the trade cycle; it may also account for the fact that average expected family size was not much affected by the most recent depression. See David Goldberg et al., "The Stability and Reliability of Expected Family Size Data," *Milbank Memorial Fund Quarterly*, XXXVIII (1959), pp. 369-85.

¹⁹ See my "Population Movements, Employment, and Income," *Southern Economic Journal*, October 1938, pp. 129-57, sec. vii, reprinted in Spengler and Duncan, *op. cit.*, pp. 234-55.

been argued that it is easier to make adjustments and overcome errors of entrepreneurial judgment when a population is growing appreciably than when it is virtually stationary. Thus overinvestment in particular sectors, particularly those for whose products demand is inelastic, is more speedily rectified, with the result that expectations are not so adversely affected; and a one-plus ratio of newly-entering to departing members of the labor force makes it relatively easy to distribute workers among industries in accordance with modifications in the structure of demand occasioned by changes in tastes, costs, variety of products, etc. It is supposed that an economy tends to be relatively more competitive, when not merely increase in per capita income but also increase in the number of consuming units is swelling aggregate demand; and this supposition is strengthened by the prevalence of an illusion of asymmetry, according to which population growth increases potential "demand" more than potential "supply." In much of this discussion the capacity of the state to maintain a high level of activity in a transition period is disregarded as is the rapidity with which depreciation and obsolescence disinvest capital, or the speed with which retirement, etc., can reduce the number of workers attached to a given occupation. A great deal of work remains to be done, therefore, upon the manner in which an economy responds, or can be made to respond, to high or low rates of population growth, and upon how this response is affected by such an economy's being sparsely or densely populated, agricultural or non-agricultural, etc. Similarly, much work remains to be done on the extent to which population growth has set longer waves in motion and made for increase in per capita income in the past 100-150 years.⁴⁸ Work remains to be done also on the extent to which wage-rigidity checks the employment of increments to the labor force; on the degree to which variation in the rate of population growth produces variation in the ratio of capital-saving to labor-saving inventions; on the measure in which population growth initially makes

for economic growth by stimulating aggregate demand rather than aggregate productive capacity; and on the impact of population growth upon forces generative of inflation.

(7) Heavily populated underdeveloped countries (e.g., in Asia, and in parts of Africa and the Caribbean area) resemble nineteenth-century Western Europe in that agricultural areas in these countries are supporting surplus rural populations which are destined to move into non-agricultural occupations carried on largely in towns and cities. The problems involved are more pronounced in present-day backward countries than they were in Western Europe because population density is 100-200 per cent greater, the rate of natural increase is 2-4 or more times as high, and the rate of capital formation is little if any higher than it was in Europe 125 years ago. Of analytical concern, therefore, is the impact of the flow of population out of the rural sector upon the stability of underdeveloped economies, upon the non-agricultural wage structure, upon the behavior of prices and price-levels, and upon the manner in which surplus rural labor can be used to create capital.⁴⁹

(8) In recent years interest in the concept of optimum population, prominent in the 1920's and 1930's, has diminished for a number of reasons, among them issues raised by the newer welfare economies, problems of estimation, and difficulties attendant upon making the concept serve policy purposes. The concept remains in implicit use, however, even though today it is not asked what population is optimum for a country; it is asked instead whether further population growth is desirable, given particular sets of welfare premises.⁵⁰ It may also be argued that

⁴⁸ E.g., see R. Nurkse, "Excess Population and Capital Construction," *Malayan Economic Review*, II (1957), pp. 1-11; J. R. Hicks, *Essays in World Economics*, Oxford, 1959, chap. 9; N. Kaldor, "Interactions of Cycles and Trends," *Economic Journal*, LXV (1955), pp. 608-612.

⁴⁹ See H. Leibenstein, *A Theory of Economic-Demographic Development*, Princeton, 1954, chap. 9; Leon Buquet, *L'optimum de population*, Paris, 1956; A. Sauvy, *Théorie générale de la population*, Paris, 1952, chaps. 4-7; J. E. Meade, *Trade and Welfare*, London, 1955, chap. 6; Richard Stone, "Misery and Bliss," in United Nations, *World Population Conference* (Rome), 1954, New York, 1955, pp. 779-98 (also in *Economia Internazionale*, VIII (1955), pp. 72 ff.); J. J. Spengler, "Welfare

⁵⁰ See Part I of S. Kuznets's "Quantitative Aspects of the Economic Growth of Nations," *Economic Development and Cultural Change*, V (1956), pp. 44 ff. on long swings, and pp. 28-31, 35-43, on the absence of significant correlation between rate of population growth and rate of growth of per capita income.

since actual populations usually grow faster than economic-optimum populations, there exists a strong tendency to increasing population maladjustment after an optimum position has been passed.⁴⁴ Of interest also is the manner in which a population evolves, not an optimum size of rate of growth, given the value premises regnant, but a rate of growth that does not contribute greatly to cumulative population maladjustment.⁴⁵ Of concern also is the manner in which economic development is retarded by a population's being considerably in excess of optimum size together with the nature of relations between size of an economy and size of the population optimum for that economy. It is essential, of course, that an optimum be defined in stable terms; this is not done when it is defined in terms of equality of the average and the marginal output of labor, since then the marginal productivity of factors other than labor is zero and the stock of capital is bound to shrink, along with the optimum associated with this stock.

(9) Of major concern to contemporary economists are the determinants of fertility, some of which are looked upon as economic and others as noneconomic. Three aspects of the problem have been of particular concern to economists. (a) May children be analytically treated as durable goods? (b) Can one largely account for the behavior of fertility in economic terms? (c) Must investment exceed some critical minimum if an underdeveloped country is to escape the Malthusian trap in which it finds itself?⁴⁶

Economics and the Problem of Overpopulation," *Scientia*, LXXXIX (1954), pp. 128-38, 166-75.

⁴⁴ See *ibid.*, pp. 166-75.

⁴⁵ See Jerome Rothenberg's analogous treatment of welfare functions in "Conditions for a Social Welfare Function," *Journal of Political Economy*, LXI (1953), pp. 389-405.

⁴⁶ The issues dealt with under (9) have been treated by a number of scholars. E.g., see Leibenstein's works cited in notes 32 and 44 above; Bernard Okun, *Trends in Birth Rates in the United States*, Baltimore, 1958, Part III; Gary S. Becker, "Economic Aspects of Fertility," in Coale, ed., *op. cit.*; E. E. Hagen, "Population and Economic Growth," *American Economic Review*, XLIX (1959), pp. 310-27; Ben Higgins, *Economic Development*, New York, 1959, *passim*; S. Coonts, *Population Theories and the Economic Interpretation*, London, 1957, and "The Economics of High Fertility in Densely Populated Underdeveloped Areas," in *International Population Conference*, Vienna, 1959, pp. 83-91; Kurt Mayer "Fertility

(a) A great deal of reproductive behavior may be explained by treating children as durable goods even though certain qualifications need to be noted. For over time the reproduction and rearing of children absorbs inputs (including the leisure time of parents and perhaps others) which are thus invested in the expectation that the resulting product will yield sufficient satisfaction to make the investment worth while. Several partial qualifications to this proposition are to be noted, however. (i) It is essential that potential parents possess a minimal measure of control over fertility, since otherwise rational choice is impossible. (ii) Account must be taken of the order of birth of the child under consideration (i.e., first, second, etc.), since quite significant complementarities, economies and diseconomies of scale, etc., may be involved. (iii) It is more difficult to apply rules assuring optimal selection in choice-situations involving reproduction of offspring than in most situations involving economically-oriented choice. Economic choice usually rests upon considerable knowledge of the costs and the prospective advantages associated with the alternatives available. Neither potential parents nor actual parents of one or more children are so well-informed, for they lack adequate actual or surrogate experience; too long a time interval separates the decision from the final cumulative result. They have quite imperfect knowledge of the prospective costs and returns involved, of the applicable discount rates, and of the relevant risks and uncertainties.

Given these qualifications, together with a population's age composition and its preference patterns, five types of economic change may be counted upon, if they persist long enough, to modify gross reproduction and (eventually) the reproductive performance of cohorts. (1) An increase (decrease) in prices of goods and services oriented to the reproduction and rearing of children relative to the prices of goods and services not so oriented almost certainly will produce a substitution effect against (in favor of) reproduction. (2) Whatever reduces (increases) the satisfaction-yielding power of children will operate *ceteris paribus* to reduce (increase) fertility. (3) Whatever increases (reduces) the input and/or the opportunity cost

Change and Population Forecasts in the United States," *Social Research*, XXVI (1959), pp. 347-66.

of children of given quality will reduce (increase) fertility under *ceteris paribus* conditions. (4) Whatever (e.g., change in income distribution) increases (decreases) the income elasticity of demand for improvement in the quality of children (and hence of quality-improving inputs) will reduce (decrease) fertility under *ceteris paribus* conditions. (5) Whatever increases (decreases) the real income of a population will increase (decrease) fertility, with the conditions described under (1)-(3) as given, provided that (a) this increase (decrease) consists in part in goods and services oriented to the production and rearing of children and that (b) the income elasticity of demand for quality in children does not exceed unity.

It has been assumed that any series of events producing changes in the five conditions discussed would not also modify the ruling preference patterns. This assumption is not empirically tenable, however. For the technological and other changes which underlie changes in output per head, in the variety of goods and services available, in price-structure, in cost conditions, etc., almost certainly will produce changes in preference patterns. These resulting preference-pattern changes may be either favorable or unfavorable to fertility. It becomes necessary to determine in particular situations, therefore, whether these changes are likely to be favorable or unfavorable on balance to fertility. It probably can be shown, however, that they are more likely to be unfavorable.

(b) While it is easy to distinguish analytically between changes in fertility attributable to modifications of indifference maps and changes attributable to changes in price or income with indifference maps unmodified, it is not easy to make a sharp distinction in the empirical world, especially when a society is dynamic and indifference maps as well as price and income structures are undergoing modification. It is possible, however, to point to factors which operate largely through price and income changes rather than through indifference-map changes. Illustrative of factors which reduce the anticipated utility of investment in children are collectivistic provisions for old-age and other forms of security against adversity (e.g., governmental or group "security"-supplying establishments; legislative and institutional arrangements facilitating the acquisition of income-

yielding assets by individuals); legislation or situational change (e.g., from rural to urban milieu) which keeps children out of the labor force or otherwise diminishes their capacity or their obligation to contribute to parental income or comfort; and so on. Illustrative of factors which increase the cost of children of given quality are laws requiring minimal education of children, the restriction of their employment, etc.; shifts from areas or situations where the money-costs of child-production are relatively low to those where these costs are relatively high; etc. Illustrative of factors which increase the relative attractiveness of resource-uses which compete with child production are increase in the salability of the wife's time, increase in the availability and variety of conveniences and luxuries, and (within limits) decrease in their relative prices; the establishment of savings institutions which, by providing outlets for small savings, increase the relative utility of income that is "saved" rather than spent on children.

An increase in a population's income may increase or decrease fertility. Should the demand for quality in children remain essentially unchanged, the demand for children of given quality would probably shift upward in the group of reproductive age, since any increase in demonstration effect issuing from the rest of the population would hardly be sufficient to prevent such an upward shift. If, however, the demand for quality in children rises faster than income among those of reproductive age, a tendency that might be reinforced by any demonstration effect issuing from the rest of the population, the increase in income would be followed by a decline in gross reproduction. The decline in fertility, and more particularly the decline in family size, that took place in the Western world, at least up to the 1930's, was largely the result of a persisting more-than-unitary income elasticity of demand for quality in children traceable only in part to changes in preference patterns occasioned by increase in the variety of goods and services.⁴⁹

⁴⁹ E.g., see Okun, *op. cit.* As incomes increased, latent as well as only-partially-satisfied wants could be more fully gratified. One sub-set of these wants consisted in improvement in the quality of children. Of this we have evidence in the form of persistence of a generally inverse relation between income and family size, though other variables also may have been present. On the basis of an

The decline in infant and child mortality, together with the consequent increase in the relative number of surviving children, operated in part through economic channels to decrease gross reproduction. It reduced both the aggregate cost of producing a given number of survivors and finally almost eliminated the need of any particular set of parents to produce a larger than required gross number of children in order to "insure" against the possibility that mortality would remove a supra-average fraction of their children. On the former ground net reproduction should have risen whereas on the latter gross reproduction should have fallen. Presumably, however, it was the excessive net cost of rearing a large number of children (say 6-10) to adulthood, together with increase in the demand for quality in children, that caused family size to decline.

State intervention may affect the described outcomes in two ways, other than those already noted. It may bias prices, costs, etc., in favor of reproduction. Should the state merely intervene to decrease the inequality of distribution of post-tax income, the net effect would depend upon the distribution pattern that resulted. The long-run effect of governmental intervention upon fertility may differ from its short-run effect if such intervention significantly affects the rate or the composition of net national investment and income elasticity of demand for quality in children.

(c) In view of what has been said so far under (9) a sufficiently high and sustained rate of growth of income is very likely in the end to be accompanied by a decline in gross reproduction, especially if a population has considerable knowledge of contraceptive means. It is essential initially, of course, that population elasticity be less than unitary, that is, that national income increase more rapidly than population which may be increasing as much as 2-3 per cent per year. If, however, income continues to increase faster than population for some time, the incomes of many will move into a range in which

the income elasticity of demand for quality in children appreciably exceeds unity and family size begins to fall. This tendency will be reinforced if the forces giving rise to income growth also alter the price structure appropriately, make conveniences and luxuries and durable goods cheaper and more accessible, reduce the utility of children, or increase the cost or usefulness of inputs absorbed by the reproduction and rearing of children. This tendency will very likely be further reinforced if these same income-increasing forces modify the preference patterns of consumers, since the modifications in question almost certainly will tend on balance to be unfavorable to fertility. Presumably, if increases in per capita income tended to reduce fertility for the reasons suggested, the emergence of rising income expectations would have a similar effect. In any event account must be taken of changes in income-expectations as well as of changes in actual incomes, and also of the correlates of income expectations.

Getting a fertility-reducing process under way today probably presupposes a saving rate of something like 10-15 per cent of a nation's net national product (instead of 5 per cent as in England in 1700) and the conversion of a sufficient fraction of it into forms of capital which are strongly production-oriented. For then per capita income can probably grow faster than population, particularly if enough capital is invested in superior technological methods. This stage of development corresponds to W. W. Rostow's third or "take-off" stage, in which economic growth begins to accelerate.²⁰ The chances are very good, therefore, when this stage is reached, that final escape from the Malthusian trap is at hand. It is evident, however, that if the rate of decline in family size and in net reproduction can be augmented, the growth of per capita income can be accelerated.²¹ It follows that if investment can be made on a scale and in forms especially favorable to income-growth and unfavorable to fertility, escape from the Malthusian trap can be accelerated.²² One

argument presented elsewhere, however, I infer that, had technological progress increased only the quantity and not also the variety of goods and services available, the demand for both leisure and children would have been higher than it was, *ceteris paribus*. See my "Product-Adding versus Product-Replacing Innovations," *Kyklos*, X (1957), pp. 249-80.

²⁰ *The Stages of Economic Growth*, New York, 1960; see also Hagen, *op. cit.*

²¹ See the analysis of the Indian and the Mexican situations in A. J. Coale and E. M. Hoover, *Population Growth and Economic Development in Low-Income Countries*, Princeton, 1958, chaps. 17-18, 20-21.

²² E.g., see Leibenstein's defense of the "critical minimum effort" thesis in *Economic Backwardness*.

may also argue that, though a "critical minimum effort" may not be essential to getting fertility down if investment is already at a 10-15 per cent level, such effort will nonetheless accelerate growth of output per head.¹² The empirical validity of theses such as Leibenstein, Hagen, and others have advanced depends upon the existence of economic or of preference-changing mechanisms which can operate to reduce fertility and which may be set in motion by a sufficiency of growth of investment and income.

IV. THE POPULATION PROBLEM IN THE FUTURE

During the next 50-100 years we may expect two main sorts of change in the treatment of population problems: (1) The analytical boxes employed by economists to analyze the issues just discussed will change much less than will the empirical content which is put into these boxes. (2) At least three types of questions will become acute, (i) those relating to limitational factors, (ii) those relating to differential fertility, and (iii) those relating to the contriving of fertility-controlling policies. These questions will become acute for two reasons: (a) By the year 2000 world population will number 5-7 billions and the aggregate demand for goods and services will be 3-7 times what it was in 1950, while by the year 2050 the corresponding figures could be 10-18 billion people and a demand 11-49 times what it was in 1950. (b) Technological change may tend to erode demand for persons of little skill and perhaps also the sentiments which prompt their uneconomic support.

(i) Should compound growth prove descriptive of the future movement of numbers as well as of that of per capita income, scarcity of suitably situated space will be steadily intensified. So also will scarcity of water and some natural resources, should exploitation of newer sources of energy (i.e., fissionable materials, fusion, solar)

For criticism of this thesis see H. S. Ellis, "Accelerated Investment as a Force in Economic Development," *Quarterly Journal of Economics*, LXXII (1958), pp. 485-95; also H. T. Oshima's review of Leibenstein's book in *Economic Development and Cultural Change*, VII (1959), pp. 467-76.

¹² It has been suggested that persons of reproductive age may be paid for not having children. Such action would reduce fertility somewhat. Yet, it seems preferable to concentrate investment on modifying the economic structure and setting in motion persisting changes of the sort described under (a) and (c).

not proceed rapidly and economically enough. For about three-fifths of the growth anticipated by 2000 will be in the most densely populated fifth of the world's area, bringing density there from 65 to 160 persons per square kilometre. In much of this area land economy, attendant upon improvements in agriculture and space conservation through metropolization, will not suffice (though it may in the United States for 50 or more years) to satisfy comfortably an expanding demand for agricultural and non-agricultural land fed by population growth and a somewhat income-elastic demand for living space. The restraining role of limitational factors (land, energy, water, etc.) external to populations will therefore be emphasized again. It will no longer be implied, as it is by present-day depreciators of "natural resources," that the limitations to population and income growth are to be sought almost entirely within populations in the form of age structures and propensities to save and invest. Presumably, therefore, even though at first rising relative raw-material costs increase only slightly the factor cost of a bundle of output, population theory will become more Ricardo-oriented than now. The distribution of the impact of such cost increases will be conditioned, of course, by the extent to which international trade is free and individuals are free to migrate from one country to another.¹³

(ii) The progress of automation may intensify interest in differential reproduction. In the past this aspect of reproduction was not a matter of concern, having been swamped by flexible wages, technological simplicity, and democratic dogma. It now appears, however, that the labor-displacing effects of automation may be particularly incident upon persons possessing little or no skill, and that these effects could be intensified

¹³ On current opinions see *Natural Resources and Economic Growth* (J. J. Spengler, ed.), to be issued in 1961 by Resources for the Future, Inc. On land see Marion Clawson et al., *Land for the Future*, Baltimore, 1960; R. A. Piddington, *The Limits of Mankind*, London, 1957; also Colin Clark's estimate of the world's population capacity at some 28 billion, in "World Population," *Nature*, May 3, 1958, p. 1236. Regarding the relief to be had from interstellar space, a source pointed to by some ecclesiastical spokesmen, see Garret Hardin, "Interstellar Migration and the Population Problem," *Journal of Heredity*, L (1959), pp. 68-70. He estimates that removing the annual growth (over 3 million) of the American population would cost 18-20 times the GNP of the United States.

if not perpetuated by a combination of relatively high minimum-wage rates and generous unemployment compensation unless somehow rising incomes generated enough demand for relatively unskilled personal services. A hard core of relatively unskilled unemployed could be brought into being, therefore. Should this come about, it would increasingly be questioned whether reproduction should be permitted or encouraged in segments of the population in which, for genetical or other reasons, it was probable that the offspring would not prove very employable under the conditions obtaining. In consequence the eugenic and the euthenic aspects of differential reproduction would command greater attention at the hands of population students than at present.

(iii) In the past, most institutionalized population-policy proposals were designed to stimulate population growth. In the future, however, the objective of such proposals will usually be restriction of population growth, particularly in certain categories of the population. Economists, political scientists, and sociologists may be called upon, therefore, to innovate effective population-restricting policies, particularly if growth is not

sufficiently reduced merely by making cheap and easily used contraceptives (e.g., pills) available. Solutions will have to be sought in terms of such contraceptives, together with the removal of all direct and indirect subsidies to parents with more than (say) two children and the imposition on such parents of *all* costs, direct and indirect, of children beyond (say) two.²⁴ It seems highly probable, therefore, that 50 years from now Malthusian sentiments if not Malthusian methods will again be commanding wide endorsement. It is even possible that discussions of the population problem will be couched in terms of a quite inclusive social welfare index and not, as often happens today, in terms of whether minimal calorific and nutrient requirements can be satisfied.

²⁴ A three-child family system in a population like the American increases a population 1.3 per cent per year, doubling it in about 55 years; an average of slightly more than two children suffices to replace the population. The required average is higher in countries with greater mortality and/or a marital composition less favorable to fertility. In late eighteenth-century France the required average was about 4.7 children; it was lower in the United States.

FITTED MONEY AND THE COLLECTIVE BARGAINING IDEAL

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What is the "tight money" of which we have heard so much? Is it the opposite of "loose money"? If so, there is a third, essential concept which we might call "*fitted money*."

The function of money is not understood unless it is seen as a social device for rationing.

Imagine that what we call one "unit" of each commodity strangely happens to be that amount the price of which is one dollar, and that its relative value remains constant throughout our example. Then suppose we do away with money, and simply ask an infinitely wise, good, and efficient coordinator to see to it that each person gets his proper number of units of each commodity. The coordinator issues to each person a bundle of ration coupons. Each coupon is a "right" to carry away one unit of one specific commodity—an act that cancels the coupon, which otherwise will be cancelled at midnight. Thus our coordinator gives us each day our daily bread and other things.

It will be perfectly clear exactly how many bread coupons, for example, must be issued to all men together if we are to take advantage daily of our daily output—that is, one coupon for each unit of bread produced. And so for each commodity. So there will be a perfectly definite total number of coupons, of *all* kinds, which the coordinator must issue—namely, enough so that total claims on goods exactly match in number the available units of goods of all sorts. The number would still be definite if all coupons were made alike, each a valid claim against *any* kind of goods.

Now suppose a clerk in the coupon bureau places a checkmark in the wrong column, so that only one-half the intended number of coupons is sent to each person. The over-all rationing of the economy will fail. Half the units of goods are doomed to sleep on their shelves, never quickened to consummation by the kiss of the coupon.

Upon early discovery of the error, what must the infinitely efficient coordinator do? Obviously he may with lightning speed issue the other half of the coupons, thus keeping the *quantity of coupons* at the proper level. Or he could, with

his instantaneous communication, announce that the coupon price for each commodity was now not one coupon but one-half. This device equally would preserve successful overall rationing and avoid hunger in the midst of plenty. But the two devices exhaust the possibilities. A choice must be made or a combination of the two used.

It is time to abandon our coy avoidance of the word "money," and to allow for the differences between our "long-green" ration coupons and the coupons more popularly connected with rationing.

There are two main technical differences. First, each of our "money" coupons is in fact a valid claim on any kind of commodity. This feature ought to be viewed in the following light: it is a means by which, in a society where infinite wisdom, goodness, and efficiency are in short supply, each citizen may be required to give serious aid in the difficult process of discerning what ration of each commodity would be best for him, subject to his overall ration (his income) which respects the rations of other citizens of various commodities. If he likes the freedom of choice, so much the better.

The second difference is of course that long-green coupons have a velocity. This fact does not force us to change our insight that a particular given price level calls for a particular quantity of money and vice-versa; but it does require that the proper quantity of money be determined in the light of its velocity. Thus, if the dictator knew that only 90 out of each 100 coupons would be used at present, he would need to assure that some 111 coupons were outstanding for each 100 units of goods; and occasions might arise when he would need to reduce the number because some, earlier unused, came out of hiding.

Our historical record is very bad, in that in general we have not planned our monetary institutions with a deliberate, careful view to respecting any particular criterion of total demand. At times it has been as if we had had for coupon-issuing clerk a child who placed his checkmarks in a whimsical way, now issuing too

few, and now too many coupons. But it seems clear that "fitted money" requires allowance for the following considerations.

In the first place, we must define some intended total number of dollar-offers for goods and services (aggregate demand in money terms). This point is more catholic than it may sound to one totally set against "managed money"; it might conceivably be, for example, simply that aggregate demand which resulted from a totally unmanaged gold standard. Second, given the intended size of aggregate demand, we must require that prices adjust to whatever approximation to it we actually achieve.

There's the rub—that requirement that prices adjust. It is exactly here that the truly desperate feature of the problem of stabilization seems to lie.

The basic trouble is this: although we are organized primarily in a social-economic system which depends, for its contribution to welfare, upon the freedom of each price to change, yet a crucial part of the populace, perhaps especially the intellectuals, tend to believe that we have won a victory for humanitarianism whenever we prevent a price from changing and thus performing its function. Is the price of an important commodity about to rise, because men are trying to buy more of it than is available at current prices? If so, much support will be found for placing a legal ceiling upon that price. Is a price about to fall, for the opposite reason? By all means, think many men, place a "floor" under it! Prices must not be "at the mercy of the market"!

Many of the most popular objections to "tight" money are, then, in reality objections to "fitted" money.

Consider the Federal budget. The expenditures of government should be regarded as the result of a decision by the populace that a certain amount of the available commodities and productive services will best serve their needs if handed over to the government for use according to the appropriations determined by Congress. The test of citizens' willingness to hand these things to the government is whether they are willing to hand it long-green ration coupons enough to enable it to claim the commodities and services. The obvious way of tendering the coupons is through unconcealed taxes. Thus, an inability of politicians to face their constituencies

while voting for taxes roughly to cover the expenditures is *prima facie* evidence that the government is asking for more commodities and services than its citizens wish it to have. For good rationing, the government should be subjected to "fitted" money.

The government can and does, to be sure, through legal forms called borrowing, in effect have more coupons printed for its own use. It can thus obtain commodities and services by causing prices to rise so that the citizens' coupons will no longer buy so much. They are thus taxed, after all.

And the picture of governments thus taxing men while permitting them to think that their representatives are in fact voting against taxes—this picture must be hell's very own vision of respecting the dignity of man. Incidentally, so must be the picture of a Federal Treasury, in obviously inflationary times, exhorting men to buy bonds which will assuredly lose in real value, saying, not simply that it is a patriotic act, but that the bonds are an excellent investment!

Or consider the charge that "tight" money foully prevents many business men and house-builders from undertaking projects they would like to carry out. Actually, the purpose of "fitted" money—of rationing—is that men shall feel unable to lay claims to (will feel that they cannot afford) many commodities and services they would like to have. The test of an entrepreneur's right to borrow more capital goods with which to expand is whether other men are willing freely to withhold ration coupons from consumption use, or from other *investment* use, and lend these coupons to that entrepreneur. He gets his "share" of the capital of society only subject to others' getting their shares also; and his share is simply the amount he can afford under "fitted money" at the market price of capital—the rate of interest. These things apply to the government as well, which of course should pay the market rate of interest and have no legal ceiling on what it may pay. The limitation derives from social scarcity of things, not from scarcity of money as such. Certainly we can enable banks to make loans to the men in question, creating more money-coupon claims. But the commodities and services will then be bid away from other men with perfectly legitimate claims.

Examples abound; but we all know what is the most crucial source of opposition to "fitted"

money: namely, the unwillingness to treat wage rates as simply prices required, as others, to fit themselves into a pattern of compatibility, mutually and with respect to aggregate money demand.

The attitude toward wage rates is simply a part of the larger question of why there is such wide opposition to the free-market system in general. Yet wage rates do have a special status in thought: men have said we should teach how product prices are determined but drop out the distribution of income because there is no significant theory thereof.

It seems clear what the great American theory of wage rates is: namely, that employers can pay what they please—at least down to a “subsistence” level. At least as far as intellectuals are concerned, presumably we can give some credit to Karl Marx for the spread of this Marxian idea. As to the masses of men, probably such a notion is as old as the employer-employee contractual relation. At any rate, between thoughts on rockets to fend off the Communist abomination, we hold dear to our hearts one of the tenets most basic to the appeal of Communism.

If we ask a class of students, almost regardless of their level in the University or of their fields of study, whether wage rates would ever rise in the absence of unions, a majority will say no. And their elders are not different. This thought appears to have become second nature to our populace.

It is one of the depressing oddities of attitudes that, while ready enough to ask for evidence about any contrary idea, men feel no need of evidence in support of this particular belief. Repeated assertion is enough.

Yet there is some empirical evidence on the relation between unionization and wage rates. It may be worth while to call attention to one study, that of F. A. Harper.*

Facing head-on the belief that advance in the average level of wage rates depends upon labor unions, Harper suggests that if this is so the rate of increase should be greater when union membership includes a greater proportion of the labor force. He therefore compares the latter proportion and the yearly rate of increase in the average real hourly wage rate, for the period 1855 to 1955. During the period 1855-1895, a

time of negligible union membership, hourly real wage rates are shown as rising at an average yearly rate of 1.27 per cent. If that sounds small, it should be noted that it is sufficient to bring this result: within a man's working lifetime, a person of given fundamental talents, taste for effort, and relative experience would be receiving double the hourly wage an identical man would have received at the beginning of the period. Between 1896 and 1916 union membership rose until 1903 and then was stable at roughly between 6 and 9 per cent; but wage rates, instead of rising faster because of greater unionization, rose during that period at an average rate of .55 per cent, less than half as fast. Except for a temporary rise between 1919 and 1921, union membership remained about 8 or 9 per cent until 1936. Thereafter it rose in less than ten years to a little more than 25 per cent, where it has remained essentially stable. However, the average yearly rise in wage rates does not appear to be correlated with relative unionization from 1917 to 1955. For that period it was drastically higher than in the preceding period—namely 2.47 per cent. But this rate of rise in wage rates seems to fit separately *each* of two separate periods into which this longer period may be divided: 1917-36, when union membership was on the whole not above about 9 per cent, and 1936-1955, when relative union membership was most of the time nearly three times as great.

Better studies may be or become available; any inference from this one is properly subject to critical scrutiny; and we shall wish to modify our conclusion on occasion in due manner. Still, were statistics suggesting the contrary reasonably possible to gather, surely the leaders of organized labor would not have permitted one to remain in ignorance of them. Until a contrary showing is made, perhaps one may be allowed to suppose what common observation and common-sense theory might suggest, without benefit of formal statistics: that there is a systematic element—the marginal value product of the amount of labor offering itself—that pulls wage rates about.

In spite of the apparent showing of statistics and common observation, “everybody knows” that without union or directly governmental fixing of wage rates they would be intolerably low. Some sort of *ideal* for the determination of

* *Why Wages Rise* (Irvington-on-Hudson, New York: Foundation for Economic Education, 1957).

wage rates largely by union action has grown out of this line of thought. It is all too easy to oversimplify, but the general ideal seems to be that a wage rate may be pressed upward as far as the strategic position of a collective-bargaining unit makes possible. At any rate this is in effect written into United States law.

Somewhat queerly, this outlook derives aid from what might be called taking orthodox economic theory too seriously, albeit naively. The proposition that in pure competition wage rates tend to equal the value of marginal product is distorted to suggest that if ever a wage rate is less, something is badly wrong. (Doesn't Joan Robinson define "exploitation" as just such a situation?) We are only following good theory, the thought seems to run, if we require that a wage rate never fall short of matching the marginal productivity of the *number of workers currently engaged* in an enterprise.

This "non-exploitation principle" is probably the principle men mean and try to apply (if nothing more drastic) under the name of the "ability to pay" doctrine. They do not mean to apply it in a downward direction, although cases can be found in which something like this was done. Again, the same essential thought appears in the idea that wage rates should rise in so far as "productivity" has risen—and the big steel strike discussion strongly suggested very general acceptance of the notion. An optimist might take some comfort from indications, during that discussion, of awareness that *too high* a wage rate was at least a conceivable thing. (The fact that the debated "productivity" is not the relevant *marginal* productivity of labor is important, but is not the essential source of trouble.) Indeed, it might seem that the "non-exploitation" idea would lead to the proviso that a wage rate should never be *above* the marginal productivity of the number of workers currently used. Let us use the term "upward flexibility" to mean the (exclusively) *upward* matching of marginal productivity with that proviso. With this policy—or even a considerably modified version of it—we should have ruinous results; but the apparently actual ideal retains a place for a worse feature: that is, if the strategic position permits pressing to a higher wage still, such action is acceptable. This latter principle let us call "upward-pushingness."

We labeled as taking orthodox theory too

seriously the "non-exploitation," or "perfect-upward-flexibility" principle that a wage rate should at all times be no less than the marginal productivity of the number of workers currently engaged. Yet evidently it is inappropriate to free enterprise. The very mainspring of this system is the discernment of cases where marginal productivities are in excess of the prices of productive services, so that a profit is available. The only assured lever by which anyone can by himself cause the purchase of more of his productive services consists of *creating* such a difference through bidding down his price; he cannot simply wait for a rise in productivity. What we hope is that profit-seeking will, roughly speaking, remove differences.

In a side excursion, we may note that some fallacies now playing a role in interregional and international relations must stem from a failure to appreciate this last-mentioned point. It is held that relatively low wage rates cannot attract industrial plants to a region because business men know the differential will be eliminated—and of course the inference is drawn that no harm can come of dictated raising of the wage. It should be clear, in contradiction, that the hope of betterment of a low-production area rests exactly on the hope that on occasion new employers will come in to "take advantage of low wage rates." If they never did, free enterprise would indeed be a bad system. Along similar lines of confusion, many intellectuals now think that for an American to invest in enterprise abroad is simply to "exploit" the foreign population and it is a rather glorious thing if revolutionists confiscate the property. It is questionable how long foreign investment can continue in this atmosphere; and, since we believe poor peoples must be helped, the only action ultimately open is *government* gifts or loans to *governments*, which thereby tighten their hold on their people toward the point of totalitarianism. Meanwhile we wonder why the beneficiaries do not receive from us loud and clear a message about the virtues of a free way of life!

Returning from this excursion, let us consider some effects of the collective-bargaining approach to wage-rate determination, first in a full-employment society. For purposes of considering such a society, efforts toward honest propaganda should take full advantage of the

following point. There is a common practice of setting off "Keynesian economies" and neoclassical economies against each other as if they were totally different systems of thought. Especially where relative wage rates and the allocation of resources are concerned, this is wrong. Keynes's reasoning was thoroughly neoclassical in this sphere—even to the point of resting upon the perfect competition model as a sufficient approximation to the real world, except for labor unions.

We may make the policies stand out more sharply than we can suppose they do in real life, by supposing individual unions achieve at least full upward flexibility in all cases (highly doubtful) and sometimes upward-pressure (almost certainly true). While a union wage rate, once achieved, is assumed never to be lowered, we shall not yet suppose non-union wage rates to be downwardly rigid.

We ought if possible to persuade everyone to contemplate the effects of these policies in a certain very unreal world: one that is static as to technology and as to resources of all kinds including labor, but in which relative tastes for commodities change.

It is simplest if we assume monetary conditions to be such that money income per capita (and so total as well) is constant. Approximately, this condition would involve constant average money and real wage rates, and a constant price level as well.

Now suppose a change in taste increases the demand facing some industry. The marginal product of the number of workers already in the industry will sell for a higher price than before. The "ability to pay"—the "productivity" in each firm—is accordingly higher; and, if full upward flexibility obtains, the wage will rise to match. The public, in offering more dollars, clearly has voted for the use of more labor to make more of the commodity; the increase in wage rate, however, estops the direct incentive to bring in more labor and frustrates consumers—causes misallocation. But, as the textbooks should tell us, the demand facing at least one other industry (actually, no doubt, many) has declined, and so will the price for its former output and so will therefore the value of the marginal product of the number of workers originally in the disadvantaged industry. They are unable to get into the now relatively

higher-productivity occupations by bidding down the recently raised wage there; so, in retaining their employment, they must accept lower wage rates than before. Now, numerous shifts in demand must be expected. But the occasional shifts of demand to *nonunion* industries as a whole and away from unionized industries will throw some union workers out of their previous employment because they can not accept wage rates below the new high. We shall have to count on cumulatively greater misallocation and cumulatively lower relative wage rates in nonunion industries. For, in short, demand shifts to union industries will be exploited in wage rises, while shifts away will shunt more workers from union industries into nonunion. If they do not move, we shall have "pocket unemployment."

We should recall that even modified applications of upward flexibility will suffice to yield this type of result. If unions applied upward-pressure (no shifts in the economy need occur to initiate it), simply more wage-rate and allocational distortion would follow. We should contemplate this thought together with the common notion that, if unionized labor groups lead off with a forced rise in real wage rates, then as a result all other wage rates will rise to maintain a "pattern" of real wages. The idea that this process can occur without unemployment is fantastic.

Now, the world for which we derived the technical relations central to the preceding thoughts was an unreal one which was no longer advancing in technology or in human or nonhuman resources. At first it seemed appropriate to apologize for using this case even for its expository purpose. Then the writer recalled that this was simply the world of the Alvin Hansen who, by purporting to describe certain aspects of it, gathered great prestige; and the fact that Hansen displayed not the least nervousness about collective-bargaining ideals, even in such a world, suggested that the case was perhaps, in its own right, not without its lesson.

Even so, if the raising of the marginal productivity of labor through technological advance and the relative increase in capital supply made an essential difference in the conclusions, we should wish to take account of it. Actually, it means merely that the groups exploiting their firms' increased relative "ability to pay" will not necessarily occasion an absolute decline of real wage

among the less fortunate, but often and perhaps typically will cause a mere failure of these to receive as great an increase as otherwise would have accrued to them—in other words, only a *relative* real wage decline. With respect either to allocation or to the ethics of distribution of income, this distinction makes no difference at all. For the essential thoughts, our Hansenite model seems to do well enough.

No doubt with respect to allocation and the distribution of income a word is required on monopsony in a labor market, where it is presumed that an employing unit, being the sole outlet for the labor of some group, holds wage rates below those of other, comparable workers. The great amount of movement of workers casts doubt on the importance of such conditions. But where *profitable* (not just any) monopsony exists, presumably it is possible to force up and fix a wage rate within limits without reducing employment, or even while increasing employment. Even without analysis which must greatly modify the textbook statement of the possibilities here, the essential point can be made. There is no pretense that monopsonized laborers are even assuredly *among* those who tend to become organized, and of course no pretense that union activity is intended to be restricted to monopsony conditions. Moreover, there is no hint that upward pressure on wage rates in such cases would be intended to stay within the textbook limits. But the ultimately overwhelming point is that, if thought of this type of case is permitted to lead to complete application of the ideal underlying collective bargaining, the social costs, which we are examining, will enormously outweigh any putative gains.

Presumably unionism is still thought of as an equalitarian movement. As a moral offset to the misallocational effect—if that is recognized at all—is presumably offered a contention that the wage-rate changes result in a less unequal distribution of income.

As to labor income versus nonlabor income, the failure of average real wage rates to rise faster on account of unionization creates some presumption that collective bargaining does not obtain a bigger cut of the pie for workers. And of course well-known figures on the secular picture of income distribution are highly suggestive. For the rest, it is possible to show that we ought not to want a significant cutting in upon the

income to capital owners, unless we intend a totalitarian form of capital accumulation.

As to distribution of income *among workers*, on the whole it is probably not workers receiving below-average wage rates (to say nothing of the lowest) who attain power. It is scarcely they, then, who successfully claim more than the market would give them out of each productivity increase, disregard how many additional workers would find the occupation attractive, and prevent in-movements of labor by fending off downward bidding of wage rates. And in fact, if powerful unions *were* initially concentrated among low-wage workers, under application of the guiding principles they would eventually turn the formerly high-paid workers into relatively low-paid ones. Eventually the effects must be, and on the whole the effects almost certainly have been, anti-equalitarian. One may reject the ideal of material equality at all costs, and yet insist upon at least as much equality of income from labor as men's relative talents, training, and taste for effort make possible in a free market. Deliberately impeding this outcome is hard to reconcile with desire to respect the dignity of man. On the other hand, in the case of many advocates of collective bargaining (or almost any anti-market program), even to ask for principles they would espouse—to say nothing of evidence of practices—which would tend at all toward equality is merely to invite vituperation.

Attention was turned to allocational and distributional matters for the following reason. Some uncomplimentary things must be said about the relation between collective bargaining and stability. It was therefore desirable at least to try to re-open a key question which is widely treated as immune to discussion: namely, just how is collective bargaining so valuable to society that it must be retained even if incompatible with stability?

Now let us turn to that relation to stability and employment which makes the ideal of non-market determination of wage rates a primary matter in the discussion of monetary policy.

We must take cognizance of a feature of the current ideal which we have thus far carefully neglected. We took for granted the downward rigidity of unionized wage rates in general, but assumed a large body of other wage rates which would quickly fall on occasion, to maintain full

employment. Probably the popular ideal regards as *prima facie* evidence of injustice any decline in any wage rate. The establishment of this ideal perhaps needed no help from the Keynesian theory; but it surely got some. For years that theory enjoyed a widespread reputation of having demonstrated that a decline of wage rates would not help employment. Doubts that might otherwise have existed about the new collective-bargaining order must often have been squelched by such lines of thought. But the striking and overwhelmingly important development was that these Keynes-bred ideas on the ineffectiveness of wage-rate changes were alchemized into the notion that *downward rigidity was good*. Thus, this notion plus the tenet basic to the legal establishment of collective bargaining, gives as the prevailing ideal something not far from the following: wage rates may acceptably be pressed up as far as the strategic position of a collective-bargaining unit makes possible, but none should be permitted to fall.

We have already noted that this ideal *minus* the general downward rigidity still makes possible full employment exactly because it permits (a) waste of resources through misallocation and (b) anti-equalitarian wage-rate changes which bear no discernible, or even seriously asserted, relation to justice. Now, adding *general* downward rigidity to the ideal, let us explore the hypothesis that under it simply *no* policy toward aggregate demand will keep unemployment to the feasible minimum.

To be sure, holding an ideal is not the same thing as applying it. Among others, Professor Milton Friedman has felt able to write off any notion of *general* rigidity and to discuss monetary policy without much reference to troubles from nonmarket determination of wage rates. He rests on what he conceives would be the outcome if we had a fixed-percentage annual addition to the stock of money sufficient to keep the price level roughly constant, although with bobbles. Apparently he believes he may depend upon failure of unions to accomplish more than a fairly moderate distortion of the relative-wage structure, perhaps a relative advantage of the average union wage rate of ten to twenty per cent, with no rise of the average of all real wage rates above a full employment level. Indeed, he might cite the facts alluded to

above, which seem to support this kind of conclusion.

It is true that conditions are not present which would justify deducing that just now decisively general rigidity must ensue. About three-quarters of those who supply human plus unemploy services are unorganized. Yet, not all nonunion wage rates can be counted as less rigid than the unionized. Notoriously, many a plant remains unorganized by beating union conditions. And there are other sources of nonunion rigidity. At the lower wage levels, legislated minimum wage rates constitute a source, as does the relative attractiveness of leisure plus unemployment compensation; and the latter may function in somewhat higher wage ranges as well. It is hard to know whether sheer social pressure (public relations) exercises any real influence; in the present climate of opinion it may.

Friedman apparently is convinced that, if the monetary authorities hew to the line, enough rigidities will prove temporary. It seems quite conceivable, if one imagines legislators elected as able men to create mutually compatible conditions for a viable society as they see them and maintain these through thick and thin. But where a politician is merely a seller of promises to do the specific things wanted by voters including the most ignorant and the most cynical, the prospects look different: it is rather optimistic to imagine hewing to a line. What we have so far seen in wage-rate practice is but the partial application of an ideal. That we have got along thus far as well as we have, is surely a monument to the strength of the forces of competition which drag against the development and maintenance of group power to be used in the application of that ideal. Unions may indeed not yet be sufficiently strong and widespread. But for a goal held so dear, we need not forever lack additional legislation. Doubtless legislative means could be found for encouraging, or even forcing, unionization of more, or even all, occupations. As yet minimum-wage laws—a thing quite in keeping with the ideal, for cases where the propensity to organize is weak—may have been mocked by inflation, although they may even now have closed off the poor best opportunities of some of the least fortunate. But a certain labor leader was not joking when he said publicly that nothing was needed to lift North Carolina real income to the national average except suf-

ficiently high legislated minimum wage rates. In short, given the continuance of the *ideal*, we shall not forever fail to give effect to it. It is not entirely foolish, then, to consider the effects of the collective-bargaining ideal, including as a part of that ideal a general downward rigidity of wage rates.

It might be possible to suppose we are merely re-asserting a thought that has become too commonplace for those willing to understand these matters—albeit widely disregarded by those who are not willing. This idea is that, if unions press wage rates too high for productivity we shall have inflation. This is true enough, although in only one interpretation. We must repudiate the notion that the very act of overpressing wage rates will itself cause inflation in the sense that the price level rises without restricted production. The vogue of that belief is largely dead among economists—as it ought always to have been, although the day this was written a presidential candidate used the idea to forward a great extension of minimum wage rates. If without decreased employment the price level will rise on account of upward-pressed wage rates, the reason is that the authorities will deliberately raise aggregate demand in order to maintain or restore employment.

But the present point is different. The commonplace idea cited appears in net effect to contemplate merely the relatively extreme policy which we have dubbed upward-pressingness, that is, the fixing in any firm of wage rates in *excess* of the value productivity of the number of workers currently employed. On the other hand, what is suggested here is that, with general downward rigidity, the widely approved upward matching of productivity (our "upward flexibility")—or even modified versions of it—will be sufficient to defeat monetary policy aimed at full employment without inflation.

Let us explore a series of monetary policies with respect to the impact, under each, of the basic ideal implicit in the collective-bargaining approach.

Perhaps this is the place to denounce the stabilization policy which for years enjoyed all but universal preference and which, in spite of recent indications to the contrary, will probably yet carry the day: namely, the use of the employment index as the immediate guide to action upon aggregate demand. With the usual citation

of Alfred Marshall we may recall that two elements, supply and demand, are necessary for the determination of a price, just as truly as two blades are required for a pair of scissors, and then add that the point is no less true when we are thinking of the total array of prices. Unless aggregate demand is determinate, neither are the individual demand curves we think of and neither are individual prices or their average, the price level. Purely for illustration, consider an aggregate demand known to be so managed as to clear the market at a constant wholesale price level. An employer would certainly not even then be able to calculate *perfectly* the relevant value productivities and hence his reasonable bids for workers (and neither would workers if they tried). But he would be concentrating on that *relative* position of his enterprise which it is his social function to treat with some intelligence. Now, if no clue whatever to the level of aggregate demand is supplied except that it will be sufficient for full employment, his *relative* position furnishes no clue to money-value productivities. There will be nothing for employer or labor leader to contemplate as expressing in money for the next period any *real* wage rate they may consider. Being guided immediately by the employment index, then, really is no monetary or aggregate-demand policy at all. Upward pressure on wage rates when coverage of them is guaranteed would not be less than when the expectable rise in aggregate demand is limited. And the latter case should prove bad enough.

Apart from union action there is a built-in inflationary bias in the ostensible use of the employment guide, on account of the fact that no one—least of all its strongest advocates—seriously means fully to follow it. There are bound to be mistakes, as with any guide, some of which will result in overemployment; and it is merely foolish to picture a government's announcing or admitting that it is decreasing aggregate demand *deliberately in order to decrease employment!* Contrast again a similar case with some direct criterion of aggregate demand itself. Action may in fact tend to decrease employment; but, if men did decrease wage-rate demands because they wished more employment than the government-presumed amount, the social action neither would be intended to cause nor in fact would tend to bring about, their frustration.

Now consider some cases where aggregate demand policy is stipulated independently of employment.

Let us hark back to that Hansenite world in regard to which we first inspected allocation and the distribution of income—where economic advance did not occur. We noted that in this case, where money income per capita was maintained, the mere normal shifting of demand, if upward flexibility of wage rates existed, would face disadvantaged workers with the need to reduce their real and money wage rates. Now that we are introducing downward rigidity of their wage rates, we must put it simply that some workers would be unemployed. The conclusion of course does not require even that full upward flexibility which today seems to be regarded as reasonable policy. Nor is there any presumption that the unemployed would be re-employed. Indeed, since numerous shifts in demand must be expected and established wage increases under this policy are never reversed, we should have to look for cumulative unemployment. It may be protested that eventually so many unemployed would be in some sense attached to each industry that upward flexibility and rigidity could no longer be practiced. But that is merely to grant the point: unemployment would stand at a high level, if indeed it stopped growing. True, the experience might show the current ideals to be patently absurd, and they might be abandoned. Still, given the way men analyze things, that is not so sure. Quite possibly they would say, as they have said so often, "See, private enterprise cannot supply full employment!"

It need hardly be said, that any element of upward-pressingness would simply worsen the results, and indeed need not wait upon any disturbance such as a shift in demand.

In a really smooth price system, such a change as the demand shift would bring wage-rate reductions in the disadvantaged occupations, to signal for and encourage outward movements of labor, especially workers best able to fit in elsewhere, while making possible the retention of those whose best opportunities were still in the same jobs; and it would bring some upward movement of wage rates in the advantaged occupations to cause a movement into them. And these changes would be followed by some degree of reversal, in accordance with the adaptability

of workers and other factors. Evidently, for fullest feasible employment such changes should be permitted to go forward. Incidentally, the problem of the "older worker" should be pondered in this light.

Having exploited what was mainly an expository device, the Hansenite world, we face as the serious issue the question whether we must reject the central conclusions in the real, non-Hansenite world, where the march of technology and capital accumulation fairly steadily raise the marginal productivity of labor even as population grows. (Incidentally, we ought to be chary of applying this to all regions of the earth; yet the collective-bargaining religion seems intended for the whole of mankind.) We must consider this advancing world, with different aggregate-demand policies.

Should we consider seriously a policy of holding constant the per capita money income and so, approximately, the average wage rate? If we do not, the reason cannot be that it is really a bad monetary policy. The reason is rather that we so readily take for granted the wage policies which would create difficulties under it. Probably no one can imagine a labor leader maintaining his membership by pointing proudly to the increasing real value of the constant money wage rate he obtains for his followers.

But let us assume this policy. To stick to our simple but adequate illustration, a relative rise in demand facing an industry would, with any upward flexibility, raise the average wage rate, provided the disadvantaged occupations maintained rigidity. To be sure, the disadvantaged could accept a very slightly lower money wage and yet expect in a year or so to have no lower or even a slightly higher real wage. But the decline is in the present, and the offset is on the one hand merely prospective and on the other hand already counted on. Furthermore, legal minimum wage rates are fixed in money terms. If downward rigidity, then, is sacrosanct under any conditions, there is no reason to believe downward flexibility would be introduced on account of a general upward drift in the real value of money wage rate. Certainly unionized wage rates suggest nothing of the sort.

In short, the earlier suggested result of even partial application of the ideals behind collective bargaining seem to survive the presence of technological and other economic advance, at least

along with a constant per capita money income: that is, we must expect cumulative unemployment to some marked degree on account of nothing more dire than the normal relative shifts within the economy. And upward-pressingness would cause unemployment even without the latter.

The fact that with growing productivity of labor a constant price level would provide some scope for rising average wage rates has usually been accepted as recommending an aggregate-demand policy which would tend to maintain such a condition; and the idea makes some sense. The question before us is whether such a policy will suffice for full employment in the presence of dominant wage-rate ideals. And, in case of a relative rise in demand facing an industry, and so in the value productivity of its currently employed number of workers, there is in the ideals no reason the group should not exploit at least a part of the new relative advantage, even if full upward flexibility or worse were not exercised. True, the disadvantaged occupations could receive a slight relative decline in real wage while yet getting a slight increase in money rate. And therein lies the main hope for full employment under collective-bargaining ideals: namely, that the ideals will be flouted—that the strategically less fortunate workers will continue to have to accept relative losses so as to absorb the shock of the action of their more strategically placed brothers. Minimum wage rates are not yet very high, to repeat, and as yet no annual productivity increase is usual in minimum-wage laws. Still, our price level has been rising so much of the time since unionism flowered that it would be dangerous to say that experience suggests things would act as needed.

This perhaps sounds as if more drastic application of the ideals than we have had were necessary to create trouble. Yet it is not obvious how one should account for recent events unless by supposing the trouble is already here. Since 1953 the wholesale price level appears practically to have ceased ever to decline significantly, even during periods of more than usual unemployment. Earnings per hour make a poor index of wage rates, since changes in over-time work may change it. But they give some indication if read carefully. Earnings per hour did pause during the recession year of 1954, although at least partially on account of reduction of overtime hours;

but then they resumed a sharp upward march which has continued in the face of unemployment since 1958, except for a downward bobble (again helped by reduction of hours) which occurred during roughly the third quarter of 1959, after which they quickly recovered momentum to reach a new high in early 1960 that still obtained in the late summer even though overtime hours had declined. Gross national product in current dollars rose roughly 16%, while employment rose only about 6% even though unemployment still remained at a rather high level, at least 5%. The perversity of the wage rate may prove temporary, to be sure. But there is a shortage of clear reason to be confident that it will. And, barring a change in the established ideal, any temporariness may well prove temporary, in these days of far-ranging political frontier-ship.

Thus we have already tasted a condition in which unemployment persists in the face of a constant price level, a condition in which it is widely believed that a rise in aggregate demand would quite likely be absorbed in higher wage rates with little if any reduction in unemployment. But for this belief we might reasonably say we had been holding money too "tight."¹

This thought suggests much of what is to be said about a policy providing a yearly rise in ag-

¹To put in its starkest form the problem of fitting wage rates to any reasonable aggregate demand at all, I have spoken as if we were free to manage aggregate demand without attention to international equilibration. In general our public discussion proceeds as if we were. Yet we show no temptation to create conditions which would make sense of so planning—namely, by cutting loose from gold and from the fixed exchange rates appropriate to gold, and permitting free market determination of rates of exchange. On the other hand, we appear quite innocent of a plan suitable to fixed exchange rates, which would require permitting our aggregate demand in money terms to fall (as well as rise) on occasion and, of course, allowing wage rates accordingly to adjust downward so as to maintain a good fit in our money garment. The means proposed by politicians for avoiding indefinite outflow of gold from the United States constitute a mercantilistic travesty: for example, reducing our foreign aid, "buying American" for our military forces abroad, talking down tariffs against us, promoting foreign sales more vigorously, and persuading men to work harder and reduce costs. That some of these actions might be sensible on grounds other than monetary management, does not alter the point.

gregate demand sufficient to raise the price level by some small rate, say three per cent. Long ago we used to discuss this among other policies, as a matter of course. The late Sumner Slichter gained much attention in the 1950's by recommending it. We customarily said what must be apparent now: quite apart from its effect on some savers, the policy enjoys no presumption that it would help employment, and if it did so at all it would be through taking advantage of those persons least aware of changes in real income versus changes in money income. These would not consist mainly of those organized groups that employ research departments.

This policy proposal rests on the assumption that we could in fact bamboozle workers, and the even more shaky proposition that in a democracy we should want to get along by doing so if we could. A sneaking sympathy with the unions assails the writer at this point. The society has given them only one comprehensible mandate: "Get better *real* wage rates than the market would furnish—as much better as you can." If a union has faithfully achieved a particular real wage, why should it fall from grace by failing to act in the light of present and prospective price levels? It could in good conscience add the three per cent to the demands it would otherwise make, and render futile the whole operation. One cannot take such a program seriously.

There remains the policy of unannouncedly raising aggregate demand so as to make the price level outrun wage rates, if calling that a policy is not a contradiction in terms. Surely from the just-preceding discussion the hopelessness of it is evident, as well as its moral bankruptcy. By it surely we should reify a wage-price spiral in a true sense. If a wage-rate demand one per cent too high for full employment is canceled by a one per cent rise in the price level, some larger demand will be conscientiously seen by labor leaders as appropriate to protect the real-wage interests of their followers; and a larger rise in the price level will be necessary. But the larger rise too can be allowed for, by a still larger wage

demand. It would seem only a matter of time until inflation in the grand style should be expected; and there is no assurance that it would not proceed together with continuing or even growing unemployment.

A conclusion derivable from lines of thought related to all the foregoing is the one stated earlier: there may be simply *no* aggregate demand policy which will assure full employment at all, to say nothing of full employment with anything like a tolerable rate of inflation. The eminent and careful Professor J. M. Clark is evidently disturbed by some such thought. He recommends a public advisory board with considerable prestige to look at wage demands and on occasion warn unions that they are going too far.

This may indeed prove the best we can do. But as a sole recommendation it may leave one troubled. It has the smack of an assertion that in this crisis we must fearlessly call a spade a screw driver. It suggests an implicit hint that there are some underlying ethical principles of unionism and that our trouble comes only from the fact that these are now and then violated. Picture the embarrassment of a board member approached by an ethically sensitive union leader who says, "Master, what shall I do to be a virtuous unionist?"

Now, we should not say there is simply no answer to give this good man. But an adequate answer would amount to telling him to repudiate the very principles which were basic to the development of unionism in the first place. He could be told, "As long as any brother worker finds your occupation to be his best opportunity even though to get in he must somewhat undercut your current wage rate, you must permit him, yea even help him, to do so." But it will require some considerable intellectual preparation before even the more saintly labor leaders and followers will accept this for an answer. If it is indeed a sound answer, economists should make the fact clear; if not, they should show just why, and what is the correct answer.

SECTOR INVESTMENT AND THE AVAILABILITY OF FINANCE¹

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I

The chief purpose of this paper is to offer an explanation of sector investment that runs in terms of the circular flow of funds. "Flow of funds" is used in a broad sense to suggest both financial and nonfinancial flows. The hypothesis to be tested is that a sector's investment activity is to be understood in the light of its financial and nonfinancial sources of funds and that these sources in turn can be explained by the uses of funds of other sectors.

The critical element in this hypothesis centers around the investing sector's financial sources of funds (its borrowings). For even if one were able to demonstrate a significant relationship between investment uses and financial and nonfinancial sources of funds it could be maintained that financial sources were conditioned by investment uses rather than the other way around. To uphold the circularity implied in the first relationship, one must be capable of explaining borrowings independently of investment demand. A circular flow theory must then be a theory of financial availability. Financial sources must have their explanation in the amount of funds made available by lending sectors. These lendings in turn have to be related to explanatory variables other than the borrowing sector's demand for funds.

Two sets of relationships will then be presented in order to demonstrate a financial availability theory.² Fitted investment functions for the corporate sector will be shown and additional equations based on other data will be discussed for this

sector and the consumer sector as well. Lending functions explaining the chief financial sources of funds of the corporate and consumer sectors will be presented in a second table. In addition to the investment functions for the corporate sector in the first table, financial savings functions in terms of the same explanatory variables will be exhibited. Such financial savings functions plus the investment equations involve the entire statement of sources and uses of funds of a sector. Their joint analysis will then provide a succinct summary of the conditions for sector surpluses and deficits.

II

The fitted investment and financial savings functions for the corporate sector and its subsectors are found in Table I. This table is based on data prepared by John C. Dawson covering the years 1931-1950.³ Three explanatory variables are offered: net current surplus (retained earnings plus depreciation allowances), positive increases in financial liabilities and dissavings. Dissavings are the sum of negative changes in individual financial assets. Instead of consolidating such negative changes with positive changes in financial assets, these negative changes have been treated as a third source of funds. Similarly, negative changes in individual financial liabilities are treated as savings and added on to positive increases in individual financial assets to secure the financial savings variable. The reason for increasing the degree of grossness in the data was because real investment was thought to be more closely related to positive increases in liabilities and dissavings than to net changes in liabilities. Similarly it was thought that the sum of increases in financial assets and of decreases in financial liabilities would be better explained by the current surplus variable than would net changes in financial assets (positive changes less negative changes).

³ John C. Dawson, *Fluctuations in U. S. Corporate Investment and Finance, 1931-1960* (Unpublished Ph.D. thesis, Cornell University, 1957). See also sources to Table I.

¹ This study was begun under the tenure of a Ford Foundation faculty research fellowship and continued under a Social Science Research Council faculty research grant. Additional assistance has been received from the Committee on Scholarly Advancement, Bowling Green State University and the Ohio Oil Company, the latter providing part of the necessary electronic computer time. None of these sources of support have any responsibility for the content of this paper.

² Actually more relationships than these are necessary. Their discussion is deferred until later. See below pp. 8-10, 16-19.

TABLE I
INVESTMENT FUNCTIONS—CORPORATE SECTOR*

Equation No.	Coefficients of Multiple Determination (R^2)	Regression Equations	Serial Correlation ¹
Over-all Corporate Sector			
1	.9185**	$I = 2.591 + 0.1809S + 1.304**R_p + 0.3378D$ (.1383) ^a (.1702) (.3056)	No
2	.7552**	$A = 0.08813 + 0.6299**S - 0.03207R_p + 0.5231D$ (.1369) (.1685) (.3026)	No
Manufacturing and Mining			
3	.8152**	$I_m = 0.3079 + 0.2829S_m + 1.370**R_{mp} + 0.7086D_m$ (.1759) (.4205) (.4566)	Inconclusive
4	.7302**	$A_m = 0.02860 + 0.7751**S_m - 0.4443R_{mp} + 0.2731D_m$ (.1856) (.4409) (.4776)	Inc.
Railroads			
5	.5767**	$I_r = 0.04292 + 0.2486^*S_r + 1.216^*R_{rp} + 0.7540^*D_r$ (.1105) (.5131) (.2693)	Inc.
6	.6882**	$A_r = 0.01865 + 0.7679**S_r - 0.6740R_{rp} - 0.02860D_r$ (.1371) (.6365) (.3341)	No
Gas and Electric			
7	.9767**	$I_g = 0.2997 + 1.211**S_g + 1.069R_{gp} + 0.7879D_g$ (.2634) (.6364) (.4731)	Inc.
8	.1362	$A_g = 0.4348 - 0.1473S_g - 0.05061R_{gp} - 0.2076D_g$ (.2837) (.0685) (.5096)	No
Communications			
9	.9789**	$I_c = -0.1299 + 0.8858**S_c + 1.053**R_{cp} + 1.038**D_c$ (.1327) (.0454) (.2296)	No
10	.0372	$A_c = 0.1195 + 0.04193S_c + 0.02568R_{cp} - 0.1132D_c$ (.1581) (.0541) (.2736)	No
Trade, Service, Miscellaneous			
11	.9401**	$I_t = 1.104 + 0.1639S_t + 0.8517**R_{tp} - 0.2211D_t$ (.1256) (.0927) (.1133)	Inc.
12	.9019**	$A_t = 0.5130 + 0.3734^*S_t + 0.5631**R_{tp} + 0.7501**D_t$ (.1284) (.0947) (.1158)	No

* Source: The data is derived from Dawson's Ph. D. thesis, *op. cit.*, Appendix A, tables 1-6. The variables and their component transactions are as follows:

I , investment expenditures are equal to plant and equipment expenditures, change in inventory, and "other capital expenditures." The latter according to Dawson's own footnotes include "corporate residential land and construction, used equipment purchases from the Federal Government, and dealers' margins on net security issues."

A , gross financial savings, are equal to positive changes in currency and deposits, government obligations, trade credit, and corporate securities plus negative changes in financial liabilities of bank debt, net cash security issues, mortgages and miscellaneous liabilities.

S , net current surplus, is equal to net profit, depreciation and amortization, other internal charges, insurance benefits, tax refunds, minus profits tax payments, renegotiation payments and dividends and branch profits.

R_p , positive increase in financial liabilities, equals positive changes in liabilities listed under A.

D , dissavings, equal the negative changes in financial assets listed under A.

¹ The presence of serial correlation has been tested for by using the Durbin-Watson formula. (Cf. Joan Friedman and Richard J. Foote, *Computational Methods for Handling Systems of Simultaneous Equations* [Washington, D. C., 1955], pp. 77-78.) The absence of serial correlation or the inconclusiveness of the test suggest the appropriateness of the usual tests of significance based on sampling theory. Similar findings apply to the equations in Table II.

* *, significant at the 5% probability level. **, significant at the 1% probability level.

^a Standard error of regression coefficients.

That "gross" hypotheses are indeed superior is borne out by the result of fitting net equations to the same data. In parallel fashion to the 12 equations shown in Table I, twelve net equations were fitted with net increase in financial assets as the dependent variable replacing gross financial savings, and net increase in financial liabilities as the independent variable replacing positive increases in financial liabilities. With the exception of the gas and electric subsector, the results clearly indicate that the financial liabilities variable is much more significant in the investment equations when only positive increases are used and similarly that the current surplus variable is more significant in the gross financial savings equations than it is in the netted financial equations. The coefficients of determination are higher as well.

It is apparent from the coefficients of multiple determination shown in Table I that in most cases more than 90% of the variance in investment can be explained by the regression equations. Of all the variables, the borrowing variable shows the closest relationship to variations in investment being significant at either the 1% or 5% level in all the investment equations except one. In three equations the current surplus variable also attains significance—in the railroad, gas and electric and communications industries. The dissavings variable is statistically significant in only those equations where this is a property of all the independent variables—railroad and communications.

A somewhat lower degree of success is attained in the financial savings equations. The R^2 's are uniformly lower (except in the railroad sector) than in the counterpart investment equations. As was anticipated, the significant explanatory variables suggest a marked difference in the pattern of fund-flows. The flow of funds is principally from current surplus to savings with the financial liabilities variable proving significant only once (trade, service and miscellaneous). The positive relationship between this variable and financial savings in the trade equation probably indicates the financing of trade credit by borrowing.

The stability of the fitted relations for the overall corporate sector was tested by "plugging-in" observed values for the years 1954-58 and noting how close the predicted values came to the actual values of the dependent variables. The results are necessarily affected by changes in data sources.

Federal Reserve data using a revised classification of transactions and sectors was the basis for the *ex post* forecasting.⁴ Nonetheless, the *ex post* forecasting ability of the relations seems reasonably good with the equations showing a definite tendency to underestimate investment and overestimate gross financial savings except in 1954. Since the latter was a recession year, there is suggested a probable upward shift in the investment function after 1950.

The amount of financial savings (expressed as proportions of the sector's total sources or uses) seems to play an important role in significance. Thus, in the two subsectors where the coefficients of determination are unreliable on the 5% level, gross financial savings are the lowest of any sector. On the other hand financial savings for trade, service and miscellaneous are the best explained and here savings average out to a higher percentage of total uses than is true elsewhere. The relation between size of the dependent variables and goodness of fit is somewhat confirmed by calculating coefficients of rank correlation between financial savings expressed as percentages of total uses and their coefficients of multiple determination. Although too few ranks are involved for measuring statistical significance (six only), this coefficient had the high value of .77. Similarly the rank correlation of investment expenditures and R^2 was a high .74.

These results suggest that the closer one can bring the regression relations to identities (with the dependent variable equalling the sum of the independent variables) the better will the correlation results be. This does not mean, however, that it is always desirable to seek out such identities. For valuable relations can be lost. The investment equations, for example, can be turned into identities by netting financial savings against increases in liabilities. Investment is then identically equal to internal sources of funds (net current surplus) and net sector deficits. While a useful relationship, this equality is not a valid basis for identifying the moneyflows which finance investment. And yet it has been the most frequently used form of analysis within the flow-of-funds framework.⁵

⁴Cf., "A Quarterly Presentation of Flow of Funds, Saving and Investment," *Federal Reserve Bulletin*, August 1959, Table 4(D), p. 1050.

⁵See e.g., M. A. Copeland, *A Study of Moneyflows in the United States* (New York: National

Such a relationship must implicitly assume that increases in financial assets are wholly financed by increases in financial liabilities and that internal sources of funds flow in their entirety into investment activity. As our regression equations reveal, there is really a "crisscrossing" of real and financial flows. Internal ("real") sources of funds are the significant variables in the financial savings equations and financial borrowings are the significant variables in the real investment equations. Assuming that (1) data discrepancies between sources and uses are negligible, (2) the sum of the regression coefficients of each independent variable approach unity, (3) the constant terms approach zero, a sector's deficit is then the outcome of the relative magnitudes of these underlying flows. When the flows into financial savings out of internal sources exceed the flows out of borrowings (and dissavings) into real investment the sector will be incurring a surplus, and *per contra*, it will show a deficit.⁶

Additional regression equations were fitted for the corporate and consumer sectors using Federal Reserve data covering the years 1939-1956.⁷ Previous relationships were generally confirmed and

Bureau of Economic Research, 1952), pp. 253ff.; John C. Dawson, *Trends in Corporate Investment and Finance: A Flow-of-Funds Analysis* (College Park, Md.: University of Maryland, Bureau of Business and Economic Research, 1958), p. 8; Eli Shapiro, "The Post-war Market for Corporate Securities," *Journal of Finance*, May 1959, 196ff.

⁶In symbolic terms if

$$(1) \quad I = bS + cR^p + dD$$

$$(2) \quad A = b_1S + c_1R^p + d_1D$$

given that:

$$cR^p + dD > b_1S$$

then

$$(3) \quad I > bS + b_1S \quad \text{or} \quad I > S(b + b_1)$$

and given that $b + b_1 = 1$

$$(4) \quad I > S$$

and *per contra*

$$(5) \quad A < R^p + D$$

I am indebted to Professor D. M. Krabill for assistance on this proof.

⁷Board of Governors of the Federal Reserve System, *Flow of Funds in the United States, 1939-1953* (Washington, D. C., 1955); "Flow of Funds Sector and Transaction Accounts, 1950-56" (Washington, D. C., 1958), mimeographed.

variations in the variables used also suggested further relationships. Thus it was found that sub-categories of investment expenditures for the over-all corporate sector such as plant and equipment expenditures and residential construction expenditures could be satisfactorily explained in terms of sources of funds. (This was not true of inventory changes, however.) What was surprising was that the financial sources variable proved nonsignificant in the plant and equipment equation. This is possibly to be explained by our use of a single aggregative financial sources variable in all the component equations instead of selecting out the most likely borrowing source in each case. Instead of gross financial savings, positive increases in financial assets and negative changes in financial liabilities (debt retirement) were separately fitted. The result in the former relation is reminiscent of the gross financial savings relation for the trade, service and miscellaneous sector using the Dawson data. In both cases it would appear that borrowings facilitated the acquisition of assets. The consumer equations, in addition to confirming the importance of financial sources for consumer investment (durable goods expenditures and residential construction), showed a negative relation between positive increases in financial assets and borrowings. Borrowings here evidently proved to be a deterrent to positive asset increases.

III

The next step in the development of a circular flow theory is to show that financial sources of funds for investing sectors can be explained essentially in terms of the sources of funds of the lending sectors. In limiting discussion to one additional set of equations a number of relevant relations are necessarily being omitted. Two generic categories of relations comprise a multi-sector and multi-transaction analysis of circular flows. One is the "from-what to-what" relation exemplified in the relations just described and in the financial functions to be described next. These are equations involving the sources and uses of the same sector with uses providing the dependent variables. The other category consists of "from-whom to-whom" relations involving the sources of one sector as dependent variables and similar categories of uses of other sectors as explanatory variables. The from-whom to-whom relations provide a link between from-what to-

what relations since the sources of funds variables found in one sector's set of from-what to-what relations are linked to uses of funds variables found in other sectors' from-what to-what relations. From this standpoint it is desirable to have the variables being linked as similar as possible. For the closer one variable can be made to the contra-entry of the other, then the greater the approximation of the relations to identities. Under such conditions the stability of the relations is guaranteed and no regression analysis is necessary.

Exact identities are obtainable if all the sectors involved in a given transaction can be uniquely identified. This is possible for bank loans, for example, since these can be broken down by borrower. In the case of obligations issued by more than one sector or saleable by sectors other than the original issuer more than one sector may be involved on both the sources and uses side of the transaction ruling out the possibility of exact identities. It is still desirable, of course, to bring the variables involved in the from-whom to-whom relations in as close a correspondence as possible. Thus it would be better to use corporate security sales as the independent variable in investment equations if corporate securities are the dependent variable in lending equations than to use aggregate financial sources in the former equations which would include security sales as but one element. The defining of the variables so as to effect an identity in the from-whom to-whom relations may have repercussions on the goodness of fit of the from-what to-what relations. For the implied disaggregation may cause wider departures from identities in the from-what to-what relations. There is then the problem of the optimum definition of transactions (variables) in a circular flow model. In the succeeding discussion it will be assumed that the necessary from-whom to-whom relations connecting up the investing sectors' financial sources with the lending sectors' financial uses can be satisfactorily estimated.

In the 14 equations of Table II, changes in individual financial asset holdings for a number of financial and nonfinancial sectors are explained.* Since the annual changes can be negative as well as positive, the dependent variables differ from the earlier financial savings variables which

included positive asset changes only. All of these equations have the lending sectors' nonfinancial and financial sources of funds as independent variables. These variables are again defined somewhat differently than their counterpart variables in the investment equations. Nonfinancial sources represent the total of a sector's nonfinancial receipts; its receipts from the sale of goods and services, productive services and transfer payments. It is thus much more comprehensive than the current surplus variable. Financial sources are net financial sources with decreases in financial liabilities in any year being offset against positive increases.

Nonfinancial sources of funds show a considerable significance in the bank loan and mortgage equations. One might have expected that financial sources in the financial sector equations would have been at least as effective as nonfinancial sources in explaining asset acquisitions. In particular it is surprising that mortgage acquisitions of the bank sector (their most illiquid asset) are not closely related to financial sources whose chief component is time deposit increases. The negative value of the nonfinancial sources variable in the corporate trade credit equation is probably explained by the sharp decline in trade credit advanced during World War II when at the same time nonfinancial sources increased sharply.*

Increments in the money supply (net demand deposits plus currency outside banks) have a somewhat ambiguous status as a source of funds variable. It would be convenient if one would regard these increments as moneys advanced to the consolidated banking sector. But it is difficult to do this because if money is held by non-bank sectors it seems illogical to view such holding as moneys advanced to the banking system. It seems necessary to interpret monetary liability increases as the effect rather than the cause of bank credit expansion. The M variable is then a proxy variable representing the sundry influences operating on bank credit and particularly the exogenous influences of monetary policy. For forecasting purposes it is thus assumed that one could predict monetary policy and also be capable of quantifying it in terms of probable effects on the money supply.

Purchases of federal obligations is employed

* The underlying data is again provided by the Federal Reserve accounts for 1939-1956. See footnote 7, p. 7.

* The sharp decline in trade credit occurred despite the increase in receivables from the federal government which are included in the trade credit series used here.

as an independent variable in these financial equations to allow for the substitute and possibly complementary relation between lending to private investors and lending to the federal sector. As the algebraic sign of the variable denotes, the basic relationship is one of substitution. When holdings of federal obligations decline, lending to private sectors increases and *vice versa*. When holdings decline this variable is a source of funds similar to financial and nonfinancial sources. The importance of this variable is underscored by the number of times that it proves statistically significant at the 5% level or better.

It is possible that portfolio shifts are greatly influenced by the private demand for funds. In such a case the success of the federal obligations variable may indirectly measure the strength of demand. This would not be consistent with the availability hypothesis since the latter implies that plans to lend determine borrowings rather than that plans to borrow determine lendings. An alternative explanation consistent with the availability hypothesis can be offered for portfolio shifts, however. Such shifts can be said to be determined by federal borrowing plans. Thus, in regression equations where purchases of federal obligations are the dependent variable and federal public borrowing one of the independent variables, the latter variable invariably proves to be the most significant and influential. Such relationships suggest that the ultimate determinant of portfolio composition is the amount of public borrowing done by the federal sector.

Where the explanatory variables depart from the flow-of-funds framework is in the introduction of the relative interest rate variable. The interest rate on the asset in question is expressed as a percentage of the average interest return on all assets acquired by the sector. This variable was introduced because of a feeling that allocations in given financial markets could not be wholly explained by circular flow variables, and that some recognition had to be given to demand factors. If such demand influences are indeed at work they should show up in a significant positive relationship between the interest rate variable and asset acquisitions.

As an autonomous factor, shifts in the demand for funds would not be expected to be proportionate to shifts in supply. The latter shifts would be measured by changes in the circular flow variables. Construing the analysis in the

usual diagrammatic terms, more than proportionate increases in the demand for funds with given increases in supply should cause the equilibrium interest rate to increase at the same time that lending in a given market increased. Or less than proportionate changes in demand should mean a downward movement of equilibrium values for both interest rates and financial assets. This is assuming the usual positively sloping supply curve of loanable funds. If it were assumed initially that the supply of loanable funds to a given sector via a given financial instrument was perfectly inelastic then interest rate changes would merely reflect intersections of a shifting vertical supply curve with negatively sloping demand curves. Higher or lower interest rates would never determine asset acquisitions but only measure the intensity of demand for funds made available. Under these conditions an interest rate variable would actually be superfluous.

As the results show, however, only in the case of bank mortgage loans to the consumer sector is a significant positive relation in evidence (equation 8). The interest rate variable has been omitted in the trade credit equations for lack of data. It is likely, however, that extensions of trade credit are not significantly influenced by the relative returns on receivables. While frequent nonsignificance is a characteristic of some of the other variables, it is most true of the interest rate variable. Moreover its relative impact as measured by its Beta coefficient generally falls below that of the other variables.

Perhaps more so than for any other variable there are serious questions of data adequacy and of interpretation. The estimates for 1939-41 were quite speculative for some of the mortgage and federal obligations series. In some cases the same interest series was applied to different sectors although there were known differences in the composition of each sector's holdings. Even if adequate, interest rate effects may be obliterated by the forces which they set in motion. For example, if relative interest returns rise because of a shift in demand and this induces a shift of supply between markets, such shifts may eliminate statistical traces of higher returns. This is particularly so if average annual data is used as is the case here. Better results might have been obtained by alternative formulations of the interest rate variable. As alternatives, one could use the absolute interest return on the security, the first differences in this return, or the spread

TABLE II
FINANCIAL USES FUNCTIONS FOR LENDING SECTORS

Equation No.	Lending Sector	Borrowing Sector	R ²	Regression Equations	Serial Correlation
I. Corporate Securities					
1	Consumer	Corporate	.6525***	$F_{1t} = 2.9 - 5.03r_t^e - .044F_{10} + .016S_1 - .042R$ (.0803)* (.0624) (.0075) (.1062)	Inc.
2	Banking	Corporate	.3472	$F_{2t} = -2.7 + 3.07r_t^e + .0018F_{20} - .012M - .035S + .004R$ (1.9490) (.0194) (.0240) (.0418) (.0506)	Inc.
3	Mutual Savings Banks	Corporate	.5341*	$F_{3t} = -.47 + 1.04r_t^e - .255**F_{30} - 1.35**S + .36**R$ (1.5352) (.0901) (.3762) (.1140)	Inc.
4	Insurance	Corporate	.5661**	$F_{4t} = -0.03 + 9.05r_t^e - .218F_{40} - 2.49*S + .43*R$ (8.100) (.1120) (.9607) (.1434)	Inc.
II. Bank Loans other than Mortgages					
5	Banking	Consumer	.6780*	$F_{5t} = 1.26 - 1.43r_t^e - .132*F_{50} + .1383*S + .234S + .128R$ (2.80) (.0903) (.0621) (.1315) (.1264)	Inc.
6	Banking	Corporate	.6283*	$F_{6t} = 2.21 - 2.72r_t^e - .469**F_{60} + .537**M + .133S + .414R$ (6.8266) (.1227) (.1513) (.3027) (.3082)	No

III. Mortgages

7	Consumer	Consumer	.9145**	$F_{1m} = .008 - .202r^m - .026F_{1g} + .004^{**}S + .013R$ (.3006) (.0013) (.0228)	Inc.
8	Banking	Consumer	.6922**	$F_{1m-1} = -2.50 + 1.783r^m - .051F_{1g} + .035M + .088S - .024R$ (.6314) (.0234) (.0286) (.0559)	Inc.
9	Banking	Corporate	.8210**	$F_{1m-1} = -.864 + .476r^m - .018F_{1g} + .013M + .10^{**}S - .018R$ (.2483) (.0092) (.0113) (.0262) (.0220)	Yes
10	Mutual Savings Banks	Consumer	.9732**	$F_{1m} = -1.26 + .390r^m - .408^{**}F_{1g} + 2.079^{**}S + .266^{**}R$ (.6219) (.0848) (.3978) (.1059)	No
11	Insurance	Consumer	.9230**	$F_{1m} = -2.54 + 1.465r^m - .259^{**}F_{1g} - .193S + .167R$ (1.292) (.0681) (.5774) (.0818)	Inc.
12	Savings and Loan Assn's	Consumer	.9953**	$F_{1m} = .178 - .102r^m - .802^{**}F_{1g} + .270S + .873R$ (.6280) (.1306) (.2396) (.0634)	Inc.

IV. Trade Credit (Including Nonbank Consumer Credit)

13	Corporate	Corporate, Consumer, Govt.	.8891**	$F_{1t} = 2.56 + .236F_{1g} - .015^{**}S + .899^{**}R$ (.1254) (.0043) (.1113)	Inc.
14	Nonfarm non-corporate	Consumer, Non-farm non-corporate	.3986	$F_{1t} = .894 - .046F_{1g} - .004S + .198^{**}R$ (.0947) (.0226) (.0788)	No

Sources: Detailed data sources for dependent and independent variables are not shown because of space requirements. Except for mutual savings banks the underlying flow-of-funds data has been derived from the Federal Reserve accounts (see footnote 7, p. 7). Nonfinancial sources of funds for mutual savings banks have been computed independently from data given in annual reports of the Federal Deposit Insurance Corporation, 1941, 1960 and 1966.

Corporate bond yields are based on the Moody's series on industrial bonds as given in the *Federal Reserve Bulletin*. For mortgages, returns on mutual savings bank portfolios have been used for all sectors except savings and loan associations. For the latter, the series has been constructed on the basis of correspondence with the United States Savings and Loan League. Interest returns on bank loans are based on *FDIC* data on "interest and discounts on loans" and "income on loans per \$100 of loans."

The following notation will be employed. The numerical subscripts indicate sectors: 1-Consumer; 2-Banking; 3-Mutual Savings Banks; 4-Insurance; 5-Corporate; 6-Savings and Loan Associations; 7-Nonfarm noncorporate.

The letter subscripts indicate type of financial asset: c-Corporate security; b-Bank loans other than mortgages; m-Mortgages; t-Trade credit (including nonbank consumer credit). Independent variables are indicated by: r^d -Relative interest return (the rate on the [ith] asset divided by the average interest return for the [ith] sector); F_{1g} -Increase in sector holdings of Federal obligations; S -Nonfinancial receipts; R -Financial receipts; M -Increment in the money supply.

* Significant at the 5% probability level; ** Significant at the 1% probability level.

† Standard error of regression coefficients.

‡ The subscripts joined by an arrow indicate the specific sectors advancing and receiving funds respectively.

between yields on the given security and on federal obligations. All this is assuming that interest rates do respond to demand. It may be that interest rates are in part, at least, irrelevant to the measurement of demand shifts and market allocations. Given interest rate rigidities, credit rationing that took place on the basis of demand intensities would still escape detection.

The correlation results as measured by the R^2 values are superior to the regression results as measured by the frequency of significant coefficients. The number of nonsignificant variables in part indicates the presence of intercorrelation among these variables. As in the case of the investment and gross financial savings equations a rank correlation coefficient was calculated to determine if the correlation results had anything to do with the relative size of the dependent financial asset variables. This was prompted by one of the nonsignificant cases—bank purchase of corporate securities—being an example of unimportant average acquisitions. The rank correlation coefficient using 14 ranks was a nonsignificant .4. The presence of variables other than sources of funds probably means that the results cannot be given a simple interpretation in terms of approximation to accounting identities.

IV

It is believed that sufficient links have been provided to demonstrate the feasibility of a circular flow approach to sector investment. The relations described are only a segment of a complete model of circular flow. As this is envisaged, it would consist of a series of final demand relations which would explain additional categories of gross national product expenditures besides private investment. Secondly, it would contain a series of financial uses of funds functions for those sectors providing the final demand sectors with funds. Thirdly, it would include a series of indirect financial uses of funds functions for those "ultimate" sectors whose savings flows provide financial sectors with funds.

In addition to the above series of "from-what to-what" relations, the model would be made up of various linkage or from-whom to-whom equations. The structure of any statistical model depends ultimately on the kind of data obtainable. The Federal Reserve accounts on which one is necessarily dependent have undergone drastic revisions since originally published. One of the

major changes has been to provide nonfinancial flows on a highly netted basis only. In the absence of data on intermediate product and productive service flows it may be necessary to link receipts from the gross national product directly with expenditures on the gross national product. This means, for example, that payroll and other productive service receipts of the consumer sector would be explained in terms of final product expenditures (including the gross national product expenditures of this sector) rather than in terms of the productive service payments of other sectors. While this may prove adequate for the consumer sector because of the near-identity of "values added" for this sector and gross national product expenditures, it may not be adequate for the business sectors. Here gross receipts from sales may show a closer relationship to final and intermediate product expenditures than retained earnings to final product expenditures alone. Assuming that a more detailed model could be constructed involving productive service and intermediate product flows, then in addition to the altered from-whom to-whom equations it would be necessary to introduce from-what to-what equations relating such uses for a given sector to its various sources of funds. In addition to nonfinancial flows another set of from-whom to-whom relations will connect up sector borrowings with the lendings of other sectors.

The key "disturbance" variables in the contemplated model of circular flow are interest rates, increments in the money supply, federal borrowing and each sector's dissavings. These will be the exogenous variables which generate changes in the level of the internal flow-of-funds variables.²⁰ Thus if monetary policy increases credit availability, this will fan out through the economy to affect final spending and the volume of financial flows. Increases in federal borrowing have similar effects. At the same time, however, there will be increases in the holdings of such obligations by financial and nonfinancial sectors. This will result in a reduction in the availability of private credit with attendant ef-

²⁰ While interest rates will have to be estimated outside the equation system, the sources and uses framework should still prove invaluable in such estimation. Cf., Wm. C. Freund, "An Appraisal of the Sources and Uses of Funds: Approach to the Analysis of Financial Markets," *Journal of Finance*, May 1958, 275ff.

fects. It is expected that dissavings will provide a rough measure of transactions velocity and thus supplement the other variables (chiefly increments in the money supply) in explaining movements in total financial and nonfinancial flows.

Given a simultaneous equations model of circular flow as is here proposed, one should be able to determine the multiplier effects on financial and nonfinancial flows of outside disturbances. The leakages in this model are increases in cash holdings, purchases of federal obligations from the federal sector and purchases of assets from dissaving sectors. Such leakages are established by omitting from-whom to-whom equations explaining increments in the money supply and federal borrowing. While purchases of

dissaved assets may be indistinguishable from newly-issued securities in the portfolios of sectors advancing funds, by linking sector borrowings with the larger total of acquisitions by other sectors one is able to "build-in" a leakage into the from-whom to-whom financial equations. In addition to multiplier effects the suggested model should indicate the surplus-deficit role of the various sectors given various values for the outside variables. In this way the net economic impact of a sector can be ascertained.

Circular flow analyses have long been familiar as first-chapter models of the workings of an economic system. As this paper has attempted to show, they may have a considerable usefulness beyond this introductory level.

HAYEK ON FREEDOM AND COERCION*

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This important and challenging book presents a learned and powerfully argued brief on behalf of the propositions, that, in general, the maximum possible amount of "liberty" or of "freedom" from "coercion" is both practicable and urgently to be desired, and that the encroachments on freedom which prevail even in the western world are a major evil, in their actual and prospective consequences, if not in themselves. Hayek is, of course, an economist of the first rank. But he also commands a variety of skills belonging to other disciplines, and this work is primarily a treatise on a major problem of political or social philosophy, namely, the desirable pattern of relations between the state and the individual. If there is special emphasis on economic matters, it is because it is in this area that Hayek sees the gravest dangers from undue exercise by government of its power to coerce individuals.

The economist who writes *qua* economist on social policy issues presents his conclusions as a rule on a contingent or "*ceteris paribus*" basis, even when he neglects to make this clear to his non-economist audience. He knows, or should know, that his proficiency as an economist is a certificate of the possession of the requisite knowledge and analytical skill only with respect to a part of the range of relevant instrumental and final values, and that deliberately or from ignorance he is abstracting from or ignoring non-economic considerations which may be of over-riding significance.

It seems clear to me that Hayek in this book is not operating in this manner. He writes with every appearance that he is convinced that in reaching his conclusions he has taken adequately into consideration all the values that are relevant, and all the conjunctures that are actually or potentially important except major emergency situations such as war or danger of war. He manages also to reach his conclusions without giving evidence that to do so he had found it necessary to labor with the weighing and measuring of com-

peting values. Great as are the merits of his case, they are not overwhelming enough, I think, to explain how Hayek succeeded in reaching substantially unconditional conclusions and in avoiding what is, in social thought, the generally unavoidable and troublesome necessity of coping with major conflicts between values. I suggest, as reasonable speculation and inference, that the conspicuous absence in Hayek's argument of *ifs* and *buts* and of painful wrestling with the task of weighing *pros* and *cons* in the light of a complex pattern of values and of a supply of information which points in various directions is largely the result of two factors: first, that he selects as his targets extremist forms of opposing doctrine and, second, that for the purposes of his argument he works from an extremely limited set of values. With each of these procedures there is associated a particular logical peril. To attack an extreme position when it is not clear that a more moderate position is open to the same kind of objections may be, depending on the historical context, to attack a straw man, while to reach final conclusions upon the basis of consideration of a single value, or of a very limited set of values, is liable to result in what has been called "the fallacy of the unexplored remainder."

Hayek, incidentally, does not even include explicitly as a final value that freedom from coercion by other men for which this book is a massive plea. It is as a means to value, as an instrumental value, not as a value in itself, that Hayek presents his case for freedom. "If we knew how freedom would be used, the case for it would largely disappear." Men, however, often support as a means what in fact commands their full loyalty as an end, and I feel fairly confident that freedom from coercion by other individuals is for Hayek, as for me, a goddess in her own right as well as a serving angel.

To follow Hayek's argument, it is necessary to give the closest attention to his use of four key terms, "freedom," "coercion," "discretionary," and "arbitrary." In the case of both "freedom" and "coercion" Hayek makes every effort to present definitions which are precise and clear,

* This is a review article of F. A. Hayek, *The Constitution of Liberty*. Chicago, Ill.: University of Chicago Press, 1960. Pp. x, 570. \$7.50.

but "discretionary" and "arbitrary" are not defined, are used interchangeably, and seem to connote departure from "equal" treatment. Both "freedom" and "coercion" are expressly stated to be matters of degree (pp. 12, 138, 146), but there is no formal analysis of the meaning of "degree" in the context of "freedom" and "coercion." At what point "freedom" disappears as "coercion" manifests itself seems, for some phases at least of Hayek's argument, to depend on whose ox is being gored, and the form of Hayek's general argument is such that some of his conclusions turn on whether "freedom" is or is not present in the maximum possible degree, and on correspondingly formulated propositions with respect to "coercion" and "discretion."

"Freedom" is defined as "that condition of men in which coercion of some by others is reduced as much as is possible in society" (p. 11), as "independence of the arbitrary will of another" (p. 12), as a relation of men to men "the only infringement on which is coercion by men" (p. 12), (that is, which can be infringed upon only by or through the coercion of men), as "the absence of coercion" (pp. 421, 422). "Freedom does mean and can mean only that what we may do is not dependent on the approval of any person or authority and is limited only by the same abstract rules that apply equally to all" (p. 155).

Of "coercion," Hayek says that it "is nearly as troublesome a concept as liberty itself, and for much the same reason; we do not clearly distinguish between what other men do to us and the effects on us of physical circumstances" (p. 133). He insists that we should regard as coercion only the restraint on what an individual may do which is the result of the will of other individuals (or groups of men acting in a unified manner), and that we should not regard as coercion the restraint on what an individual can do imposed upon him by "physical circumstances."

"Freedom" is thus defined as freedom from subjection to the will of others, and not as freedom to do anything in particular, or for that matter to do anything at all, in the sense of power or ability or opportunity to do it. Whether a man is free or not "does not depend on the range of choice" open to him (p. 13). "It is true that to be free may mean freedom to starve" (p. 18). "Coercion," says Hayek, "occurs [only?] when one man's actions are made to serve another man's will, not for his own but for the other's

purpose" (p. 133). It is to enable him to maintain a sharp distinction between "coercion" as meaning willed restraints on others and the restraints which result from "physical circumstances" that Hayek puts so much stress on what A "wills" with respect to B as distinguished from what impact A's behavior has on B regardless of whether A had B in mind or not. As he operates his concepts, what results is that a social pattern in which the poor are miserably poor and the rich splendidly rich can be one in which the poor have unimpaired freedom while the rich have none at all.

The courtier living in the lap of luxury but at the beck and call of his prince may be much less free than a poor peasant or artisan, less able to live his own life and to choose his own opportunities for usefulness. Similarly, the general in charge of an army or the director of a large construction project may wield enormous powers ... and yet may well be less free, more liable to have to change all his intentions and plans at a word from a superior, less able to change his own life or to decide what to him is most important, than the poorest farmer or shepherd. (P. 17.)

Here the test as to whether one is free or not seems to be how wide one's range of choice in fact is, although I find it difficult to picture a situation in which the courtier, the general, and the director of a large construction project cannot throw off the chains associated with their status and acquire the freedom of the poorest farmer by choosing to be poor farmers themselves.

In other situations where the question is, or may be, whether the rich and the powerful are coercing the poor and the weak, Hayek rejects as a criterion of the existence of freedom the impact of another's action on one's range of choice as long as one is not reduced to the choice between submission or death. If an employer refuses me employment or a near-monopolist refuses to sell to me except on the employer's or seller's terms this does not constitute coercion "so long as the services of [that] particular person are not crucial to my existence or the preservation of what I most value." Even a complete monopolist does not have any power to coerce unless, as in the case of the owner of the only spring in an oasis, his customers have "no choice but to do whatever the owner of the spring demanded of them if they were to survive." Even in that case the power of the owner of the spring to coerce (profitably?)

would be removed if he were required to treat all customers alike (p. 136).

So far, it has been private coercion, of the poor by the rich, which has been in question. Where what is in question is public coercion, say, of a rich minority by a poor majority, Hayek seems to me to change his criterion of coercion. If government applies pressure on individuals, as by taxation, but by "general and impersonal rules" or by rules "so framed as to apply equally to all people in similar circumstances," this is either not coercion or, if it is, it is free "largely of the evil nature of coercion" (p. 143). Progressive taxation is condemned in principle as not applying equally to all in similar circumstances. "Outside the field of taxation, it is probably desirable that we should accept only the prevention of more severe [private] coercion as the justification for the use of coercion by government" (p. 144).

Hayek presents against progressive taxation a number of objections, whose validity I for the moment do not challenge. But insofar as he objects to progressive taxation on the ground that it constitutes invalid coercion of the rich, I do not see how he reconciles this with his refusal to acknowledge coercion by employers or monopolists of employees and customers unless the latter are left with "no choice but to do whatever the owner of the spring [or the monopolist] demanded of them if they were to survive." I am sure that even in its most extreme manifestations progressive taxation has never been carried so far that "survival" has become more difficult for the pre-taxation rich than for the poor.

To practically everyone "freedom" is a laudatory term, and practically everyone tends to make exclusive claim to its use for the kind of "freedom" he likes. But one man's "freedom" is another man's "license," and it seems to me that in learned discourse if one wants to discuss "freedom" without becoming confused or confusing others, one should label the different kinds of "freedom" one is friendly to or hostile to or indifferent to by neutral designations such as *c*, *k*, or *x*. But Hayek is fighting for the label as well as the idea, and he claims some measure of historical, etymological, and logical authority for his particular definitions. His use conforms to "liberty in its original meaning" (p. 17). "We land into anarchy when we equate liberty with lack of any restraint" (p. 425, note 25, where this is quoted approvingly from Malinowski; inci-

dentally, this is the most portentous warning of the dire consequences of using terminology in other than a prescribed manner that I have ever encountered). "It is questionable whether the use of the word 'liberty' in the sense of 'power' should be tolerated [by whom?]" (p. 18). Hayek does demonstrate that other men good and true have used the sacred words "freedom" and "liberty" in substantially the same manner as he does, but there is no difficulty whatsoever in demonstrating that a host of other men presumptively equally good and true have used them in a different manner. What does matter, it seems to me, is that while it may very well be important to use different terms for "freedom from" and "power to" and not to confuse one with the other, to discuss "freedom from" in abstraction from "power to" is futile, since the extent and practical significance of "freedom from" is highly dependent on the extent and location of "power to." As a rule, what other men can and cannot do to us depends on their and our "physical circumstances," which may be acts of God or the product of laws of nature, like volcanic eruptions, but often are very much man-made creations, and often are the means whereby men find it possible to coerce other men or find it possible to resist the attempts of others to coerce them.

Hayek argues that if citizens are to be secure against evil coercion by government it is necessary that authorities shall act only according to "the rule of law"; that is, by rule instead of in a discretionary manner and that legal rules shall conform to the principle of "equality before the law"; which at one point he expresses as the principle "that the people should be treated alike in spite of the fact that they are different" (p. 86), although elsewhere he concedes that a severely limited measure of classification of persons may be necessary for some legitimate purposes.

There is a vast literature on the issue of "rules versus authorities," in which the case for "rules" is argued on the basis of the certainty and predictability they provide, as well as on the protection they provide against judicial and administrative arbitrariness. A dictum of Lord Camden in a 1705 case was apparently once a standard citation for opponents of judicial discretion:

The discretion of a judge is the law of tyrants; it is always unknown; it is different in different men; it is casual and depends upon constitution, temper, and passion. In the best it is oftentimes caprice; in

the worst, it is every vice, folly, and passion to which human nature is liable.³

As against this it has been asserted from the earliest times that the letter of the law killeth. As a match in one sidedness for Lord Camden's dictum, but on the other side, I cite Benedetto Croce's statement:

There is no justice under the sun except the justice which is done in individual cases, with the proverbial regard for time, place, and the circumstances by which cases are altered.⁴

Somewhere between these two extremes lies the area of balance and of practicality. Judging from the abundant literature, the experts in many sectors of law and administration are struggling with far from complete success as yet to reduce to rule the departures from rule which are desirable in principle in the interest of "equity" or "justice" or "efficiency" or are simply unavoidable in many instances. To adapt an eighteenth-century saying by Abraham Tucker, "It would be a masterpiece of moral science to know when a fundamental rule may be dispensed with."

It seems to me that we are in the same boat with respect to the principle of "equality before the law." I have already quoted Hayek as saying: "It is of the essence of the demand for equality before the law that the people should be treated alike in spite of the fact that they are different," (p. 86) and he elsewhere says that "rules should be general, even if some are thereby hurt" (p. 159). But this is too strong meat to be taken as a steady diet, and Hayek for some purposes would at least classify persons according as they are idiots or responsible beings. In the fiscal field, he finds "equality before the law" in proportional taxation, and cites in support McCulloch's dictum: "The moment you abandon the cardinal principle of exacting from all individuals the same proportion of their income or of their property, you are at sea without rudder or compass, and there is no amount of injustice and folly you may not commit" (p. 308). But proportional taxation of income means regressive taxation of property, and proportional taxation of property means progressive taxation of income, and at

present levels of taxation proportional taxation of income rigorously adhered to would mean starvation for many. The closest possible approach to "equality" in taxation as an objective arithmetical concept would be the poll tax, and the minute one begins to read into the term "equality" more than a bare arithmetical equivalence, there will still be a rudder if the legislators are reasonably sane and reasonably intelligent, but the compass will be lost. Perhaps what is wrong here is the notion that in the field of social relations there are or can be the equivalent of compasses.

Hayek does at one point concede that special rules applicable to different classes of people do not violate the requirement that the rules of true law be general "if they refer to properties that only some people possess." This would be a true concession, an important one, and a fatal one for much of his argument, if the "properties" referred to meant, say, material possessions, or had reference to differences in power, status, needs, desires, deserts, and so forth. But he has effectively safeguarded himself against this concession having appreciable practical significance.

Such distinctions will not be arbitrary, will not subject one group to the will of others, if they are all recognized as justified by those inside and those outside the group.... When...only those inside the group favor the distinction, it is clearly privilege; while if only those outside favor it, it is discrimination. (P. 154.)

I don't think that in practice it would often be a simple matter to identify the relevant groupings, and I don't think that in the abstract it would be easy to accept majority rule within the groups as defined, which is what I presume to be the case here, while rejecting it for the aggregate assembly. It seems to me also that this kind of argument not only must start from the premise that members of a society have only property claims on and property obligations to their fellow members in the legitimate area of political relations but must also presume that it is incumbent on all of us to accept the same premise as a categorical one.

Hayek states that the "political philosopher" will often encounter a conflict of values, and in such case he "must choose which he should accept and which reject" in order to attain "that comprehensive outline which must then be judged as a whole" (p. 115). I don't find in this book that

³ Cited from Roscoe Pound, "Discretion, Dispensation and Mitigation, the Problem of the Individual Special Case," *New York University Law Review*, April 1960, p. 926.

⁴ *My Philosophy*, London, 1949, p. 30.

"comprehensive outline" in which conflicts and rivalries between a wide range of values have been resolved. The economist within his own limited field does not resolve the rivalries between, say, the values of food, shelter, and clothing, by the acceptance of one and the rejection of the others; in comparable situations in their fields neither does the legislator, the jurist, or the ordinary individual trying to behave like a good citizen. In political philosophy and still more in moral philosophy and in moral theology, rivalry of values—as distinguished from opposition of values—is recognized also, but the method of resolution most often proposed, explicitly or by implication, is to rank the values by classes or categories in a hierarchical "scale of values" dogmatically or intuitively identified and to assign priority for any fragment of value belonging to a higher category over any aggregate of value belonging to a lower category. Even in terms of abstract philosophizing this can lead to fantastic results, and in this respect at least it seems to me that the naive practice of the practical man and of the man on the street is superior even intellectually to the sophisticated nonsense of the philosopher.

Hayek as "political philosopher" does not fall into this age-hallowed intellectual trap. But neither does he adopt, in his wider field, the method of resolution which he would surely follow if he were dealing with the problem of choice between bread and jam. As best I can make out, his procedure consists of narrowing the range of final positive values which he recognizes as entitled to consideration in the sector of political behavior, and of finding only complementarity, instead of rivalry, among the accepted values.

On the level of final values, Hayek recognizes only the values of growth, of change in a desirable direction, economic, intellectual, cultural. Freedom is supported because it best promotes all kinds of desirable growth. Democracy is, after a weighing of *pros* and *cons*, unenthusiastically supported as a means, not as an end. Society is to be left substantially to its own spontaneous forces except for the enforcement of a justice which is substantially the equivalent of "commutative justice," the justice of the competitive market place, where the essential "equality" is in the objective values of the things voluntarily exchanged between honest persons unbound to each other by any other ties than those of fair ex-

change of considerations. These spontaneous forces will best promote the various types of growth, all of them, which are desirable.

Hayek does not say in so many words that growth-values are the only final values entitled to be taken into consideration in deciding the proper scope of government action, and I attribute this position to him only on the basis of my understanding of the general drift of his argument and of scattered dicta of his in which he relegates to the category of instrumental values what to others are final ends or else rejects as irrelevant to government what are or may be final values. As in the case of democracy, so also "civil liberty" is supported on the strength of its serviceability to growth. So-called "distributive justice" is rejected as a legitimate end of government. "The desire of making people more alike in their condition cannot be accepted in a free society as a justification for further and discriminating coercion" (p. 87). As I have already noted, freedom from coercion is supported for its instrumental value as serving growth, not as an end in itself, although when Hayek states that "It is at least not obvious that coercing people to contribute to the achievement of ends in which they are not interested can be *morally* justified" (p. 144; *italics mine*) he perhaps justifies the inference that if his attack on coercion for its instrumental defects were to fail he would be willing to attack it as also an evil in itself.

Criticizing the "militant antireligionism" of nineteenth-century Continental "liberals," Hayek says that for the true liberal, "the spiritual and the temporal are different spheres which ought not to be confused" (p. 407). The intellectual history of the nineteenth-century relations between secular "liberalism," "Catholic liberalism," and "social Catholicism," is an interesting one which has many points of contact and of contrast with Hayek's treatment, and one in particular which is especially relevant at this point. The secular liberals objected to the injection of "spiritual" considerations into any temporal field; the Catholic "liberals," few in number, opposed the acceptance by government of "spiritual" ends as coming within its framework of reference, but insisted on the importance of the role of the socio-ethical teaching of the Church for the private ethics of the individual; the "social Catholics" and, still more, the "Catholic socialists" insisted upon the duty of government to impose a moral

code upon social behavior, and gave priority to considerations of "distributive justice" and of other "spiritual" values over considerations of economic efficiency and material prosperity. Hayek criticizes the Continental secular liberals for "confusing" the "spiritual" and the "temporal"; I presume he would also criticize the "social Catholics" for their different pattern of "confusion" of the two. As long, however, as "spiritual" values have power over the minds of men, it is probably a mistake to think that it is at all possible to keep in strictly separate compartments "spiritual" and "temporal" values except by arbitrarily downgrading the one or the other. Once they are both recognized, however, the problem presented by rivalry of values has to be faced, whereas Hayek fails to face it.

Hayek's argument for freedom as essential to economic and intellectual growth rests in the first instance on the claim that free private enterprise and the free market, with its rewards for service rather than for "merit," is more efficient in generating income than any alternative system of economic organization, and secondarily, on the claim that economic freedom, despite or rather because of the inequalities of wealth and income that result from it, is the sole possible nursery and protection for the innovating initiative of the gifted individual, for scientific discovery, and for aesthetic achievement. One of the freedoms that Hayek supports is freedom of association, and he characterizes the possibly serious evil consequences of monopoly as so much exaggerated that they are brushed aside in a brief section headed "Monopoly and Other Minor Problems" (pp. 264-266). Trade union monopoly, however, is not treated as a "minor problem."

Hayek insists that government is inherently incapable of exercising an important planning role in the development of desirable institutions, and that institutional development should be left to the play of "spontaneous" (that is, individual or private) forces. This can be relied upon to produce good results. "No institution will continue to survive unless it performs some useful function" (p. 433, note 21). "It is in the pursuit of man's aims of the moment that all the devices of civilization have to prove themselves; the ineffective will be discarded and the effective retained" (p. 36). "All that we know is that the ultimate decision about what is good or bad will be made not by individual human wisdom but by the

decline of the groups that have adhered to the 'wrong' beliefs" (p. 36).

I do not see how this doctrine can be distinguished from "social Darwinism," or from that "historicism" which Hayek has elsewhere so persuasively warned us against. I miss a discussion of the rate of speed at which institutions of the past, like serfdom, slavery, caste, trial by torture, latifundia, religious persecution, head-hunting, and so on, which at least today many regard as *never* having been "useful," got displaced, through spontaneous forces, by "useful" institutions. It seems feasible to me to apply Hayek's method of speculative history to government itself, and to treat it, with all its defects and such merits as Hayek may be willing to concede to it, as itself an institution which is in large degree a spontaneous growth, inherently decentralized, experimental, innovating, subject not only to tendencies for costly meddling but also to propensities for inertia and costly inaction.

Hayek ends his book with a long section of eight chapters under the heading "Freedom in the Welfare State," in which he applies his political philosophy as well as high-level technical economic theory to, among other topics, trade unionism, social security, taxation, urban planning, agriculture, which I do not have the space to examine here, and much of which I do not feel informed enough or competent enough to appraise in detail. With much of it I am in substantial agreement; with some of it I am in full agreement. These chapters certainly deserve the careful and objective study of enthusiasts for particular "welfare" measures involving massive intervention by government, even if they find them in some respects unduly subject to quite opposed enthusiasms.

Included in these chapters is a set of positive proposals for government action in the "welfare" field. This is a substantial enough program to destroy any claims Hayek may have to the *laissez faire* label, or perhaps I should say, to acquit him from the charge of being an exponent of *laissez faire*, as traditionally understood. I am sure that it is far-going enough to trouble many of the "libertarians" with whom he is commonly associated. I am not at all satisfied that he has shown that his program has any practical possibilities of realization consistent with the principles of "rule of law," of "equality before the law," and of "freedom from coercion" as he expounds them

in the earlier portions of his book. His support for the program is largely in terms of "There is no reason why not" or "There is little reason why not" and there is scanty, perhaps no, indication of the nature of the thinking which led Hayek to give support to a program which, with all its limitations and qualifications, does involve a measure of redistribution of income through governmental "coercion." If Hayek were to move a few degrees further in this direction, the possibility would arise of having reasoned debate between those

who may in the recent past have gone somewhat too far in their advocacy of the "welfare state" and those who may in the recent past have gone much too far in their hostility to it. To such a debate Hayek could, if he would, make a major contribution, by virtue of his learning, his analytical skills, and his dialectical virtuosity. From such a debate could come that type of enlightenment which the social sciences and social philosophy seem to me in our present age to need more urgently than anything else.

COMMUNICATIONS

A NOTE ON STATIC, DYNAMIC, AND HISTORICAL ANALYSIS*

Professor Machlup's recent article on statics and dynamics¹ closed on a rather agnostic note. A more positive view would have been justified if account had been taken of certain precise usages of these terms proposed by Frisch and Samuelson.²

To complete the record, this note briefly summarizes Samuelson's exposition; it then calls attention to a flexible method of temporal analysis that is implicit in the Frisch-Samuelson approach but has not been described explicitly. Failure to recognize this and other devices for avoiding the limitations of traditional theory has been responsible for much of the terminological confusion so well documented by Professor Machlup.

Some writers, fretting under the limitations of narrowly restricted *ceteris paribus* models, which treat as constant certain analytical elements that are not ordinarily constant, have called such models static and their own less restrictive models dynamic. Others, notably Frisch, have endeavored to preserve for static and dynamic the meaning that these terms brought to economics from mechanics. Static systems, in this sense, are systems in which (a) the functional responses of the variables to random (or systematic) exogenous shocks (departures of variables from their equilibrium values), or to posited changes in parameters (as in comparative statics), are assumed to occur either instantaneously or within a single time period of unspecified length, and (b) nothing is said concerning the path of return to equilibrium. A static system is called 'timeless' because neither the time required for the process of adjustment nor the process itself are specified.

If this definition of static systems be accepted, dynamic systems may then be most simply defined as "the totality of all systems which are not static."

* This note derives from certain work done for Resources for the Future, Inc., in collaboration with Professor Harold J. Barnett of Wayne State University. It has benefitted from a number of helpful contributions by Wolfgang Schoellkopf and from critical comment by Professor Lowell D. Ashby of the University of North Carolina.

¹ Fritz Machlup, "Statics and Dynamics: Kaleidoscopic Words," this *Journal*, October 1959, pp. 91-110.

² Ragnar Frisch, "On the Notion of Equilibrium and Disequilibrium," *Review of Economic Studies*, III, 1935-36, pp. 100-105. P. A. Samuelson, *Foundations of Economic Analysis* (Cambridge, Mass., Harvard University Press, 1948), pp. 8-10, 284-5 and Chapter XI (hereafter *Foundations*).

cal.³ This definition, though correct, is not revealing. Samuelson therefore proposes a positively formulated set of definitions. In his phrasing of Frisch's formulation,

*A system is dynamical if its behavior is determined by functional equations in which [economically significant] variables at different points in time are involved in an essential [i.e., an irremovable] way.*⁴

This means that a functional relationship (or system of functional relationships) is *static* if it is immaterial whether the elapsed time is specified, and *dynamic* if the elapsed time must be specified. Thus:

$$O_t = f(R_t, L_t, C_t)$$

and

$$O_t = g(R_{t_0}, L_{t_0}, C_{t_0}, t - t_0)$$

represent static and dynamic systems respectively, provided the latter equation cannot be reduced to the former by formal manipulation. We could thus say that a system is *dynamic* to the extent that it has an *endogenously determined time path*.

This way of defining 'dynamic' is necessitated by the fact that it is possible for a system to be static in the sense defined above and nonetheless trace out an *exogenously determined time path*. Two concepts of time are implied. One, which operates in all dynamic analysis, is "process time." Derived (including integral) functions of process time relate the later values (effects) of certain unknowns to earlier values (causes). Process time is thus endogenous to a model. "Historical time," on the other hand, refers to an unending time continuum. Values of unknowns at later points in historical time are not functionally (i.e., endogenously) dependent on values at earlier points. No cause-effect relation *through* historical time is specified; its influence is defined exogenously to the model.

If one or more variables or parameters of an appropriately constructed static system change in a manner that is systematically related to the passage of historical time, and if the system is assumed to adjust instantaneously, it will trace out a 'moving

³ Samuelson, *Foundations*, p. 313.

⁴ *Foundations*, p. 314. The modifying phrases in brackets are taken from the expository elaboration elsewhere on the page. Italics in original.

equilibrium' path through time.⁸ Samuelson calls such a system "static and historical" to distinguish it from the more common type, which he calls "static and stationary."⁹ We might say that a *static and historical system is one with an exogenously (but NOT an endogenously) determined time path.*

The purely dynamic system on the preceding page becomes dynamic and historical by introducing dated time, t , as an additional explicit element:

$$O_t = h(R_t, L_t, C_t, t - t_0, t)$$

The parenthetical qualification in the preceding definition is thus needed to distinguish *static and historical* systems from their *dynamic and historical* analogues, these latter being systems in which the endogenous time path is also subject to exogenous influences occurring at regular or irregular dated intervals. Systems may also be *dynamic and non-historical*. Samuelson terms such systems "causal."¹⁰

Thus far, following Samuelson, we have distinguished four types of analytical systems, two static and two dynamic. In so doing, no essential distinction was made between exogenous, dated changes in variables and similar changes in parameters. Inclusion of temporally systematic exogenous change in either variables or parameters sufficed to make a system "historical."

The distinction between variables and parameters means that, in a static system, where the relationship among the variables is simultaneous (i.e., timeless), the current values of the parameters must be independent of the current values of the variables.¹¹ But this does not require us to regard the parameters as living an existence that is wholly isolated from the variables. If we now think of the static system as assuming different configurations at successive points of time, we may, with Schelling, envisage the possibility that the "parameter values change over time and that their rates of change are geared to the values of the variables."¹² This would

⁸ "According to the present definition the historical movement of a system may not be dynamical. If one year the crop is high because of favorable weather, the next year low, and so forth, the system will be static even though not stationary. The same is true of a system showing continuous growth or trend, if the secular movement is taken as a datum and if the system adapts itself instantaneously." *Foundations*, pp. 314-5.

⁹ If, in the static equation on the preceding page, the variables have the same values for all t 's, the system is *stationary*, and the t -subscripts, ceasing to add meaning, are dropped.

¹⁰ *Foundations*, pp. 9-10 and pp. 317 ff. Note also the statement that "every historical system is to be regarded as an incomplete causal system." (*Ibid.*, p. 315; original italics.)

¹¹ T. C. Schelling, *National Income Behavior* (New York: McGraw-Hill, 1951), p. 256.

¹² *Idem.* Italics in the original. Other types of in-

require introducing into the model one or more dynamic equations to convert one or more parameters of the static equations into variables of dynamic equations.

This method of broadening the scope of an analytical model—of bringing some of the unexplained elements previously covered by *ceteris paribus* within the explanatory framework—involves the relatively complex mathematics of dynamic analysis. If no other method were available many doors would be closed to those who (like the present writer) are mathematically unskilled.

In fact, two alternatives are available. The first is to remain wholly within the static and stationary framework but treat as variables elements that have traditionally played the role of parameters. Since the traditional variables represent economic, and the traditional parameters non-economic categories, it is not easy, and may be impossible, to include both as variables in the same set of simultaneous functional relationships.

A second method is to treat the economic elements as variables and the non-economic as parameters in static equations of the traditional sort, but to approximate the dynamic method outlined by Schelling while remaining within the static and historical frame of analysis. To illustrate, let us begin with consideration of the standard static production function, which we shall write in the form

$$O = f(R, L, C; P)$$

where the variables are O (output), R (natural resources), L (labor), and C (capital); and where P is a collective term representing all the parameters. Thus the values of the components of P reflect such things as the kind of product, the types and qualities of the inputs, the type of productive technique employed, the chemical and physical processes involved, and so on. Since the determinants of P can readily be imagined to be invariant under changes in the variables—or at least under small changes—no intellectual problem is posed by the customary distinction between variables and parameters in the production function. And since one can readily contemplate alternative combinations of the variables without becoming involved in temporal sequences, no problem is posed by the static form of the equation. The model is, quite acceptably, static and stationary.¹³

terdependence between the parameters and the variables are also possible.

¹³ In specifying P we have departed from customary procedure. Terms for parameters are not ordinarily specified in implicit functions because, as coefficients, they are implied by the operator, " f ." That is, the parameters help to define the form of the function. Therefore it must not be inferred that

Suppose, now, that output in the above production function is the national product, and that it is desired to treat the problem of growth of national product through time. A first step might be to assume that the time rate of growth of one or more of the input variables (e.g., population, and therefore L) was exogenously determined, and (after specifying whatever other conditions were needed for solution) to let the model trace out a 'moving equilibrium' time path. The model would have become static and historical, with P constant.

The next step yields a static and historical approximation to Schelling's dynamic method. Let us suppose that the growth of the variables in the model is presumed to have certain consequences not entailed by the production function *per se* (and therefore not endogenous to the model). That is, certain consequences, reasonably inferable from the fact of growth, will occur inside the socio-economic system being analyzed but outside the formal model (which only partly represents the system). Let us suppose further that among these outside consequences are some that could reasonably be expected to entail change in one or more of the components of P . In that case, P could be viewed as changing exogenously through time in a manner determined by the growth of output. The moving equilibrium time path would now be different than before; but the model would still be static and historical.¹¹

The difference between the two static and historical cases just considered is that between constant P and changing P . One is therefore tempted to suggest that Samuelson's static and historical category¹² could be subdivided into two subclasses: parametrically invariant, and parametrically variant.

Purists may object that when, in the first case, we selected one of the variables for exogenous determination as a function of "historical" time we thereby transformed it into a (continuously varying) 'parameter,' and hence that this case, as well as the

second, is really one of parametric variance. On a strict interpretation, this is correct. But once an analyst has, in accordance with his own purposes, distinguished the variable from the parametric elements of his model, it is surely less confusing to retain this terminology throughout than to insist that when variables are treated as parameters they must be called parameters. The suggested subclassification thus seems to be a meaningful one.

It also seems to be useful. Parametrically variant growth models—which might also be called "proto-dynamic"—are capable of taking into account the effect of temporally successive changes in a system being analyzed on elements determined outside any partially representative model of the system, and of the feedbacks on the model. What is involved is an "analytical partition" of reality into (1) a set of simultaneously interdependent elements (variables), whose relationships to each other are formally specified; and (2) another set of elements (parameters), some of which may be regarded empirically as simultaneous and interdependent with the first set, or with each other, but which are analyzed outside the formal model for reasons of convenience. This has the advantage of enforcing rigorous analysis up to a point, while opening the door to systematic, semi-rigorous analysis of parametric variance.

There is, however, one disadvantage: the unspecified adjustment processes by which the system moves through time from one point on the moving equilibrium path to another must be assumed to have no effect on the static equations of the formal model, and this may not always be realistic. Unless, however, the adjustment processes introduce a cumulative departure from equilibrium conditions and therefore from the equilibrium path it is difficult to see how this disadvantage could be important.

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MACESICH AND STEWART ON MINIMUM WAGE EFFECTS STUDIES: COMMENT

These comments are directed to the article by Professor Macesich and Mr. Stewart on "Recent

the specification of P implies that it could also be regarded as a variable. To do so would alter the form of the function, and the new form would not, in general, fit the problem.

¹¹ P might also have varied for reasons independent of temporal changes in the variables. In general, parameters can be determined in any way we like as long as it does not involve functional interdependence with the current values of the variables.

Department of Labor Studies of Minimum Wage Effects," that appeared in the April 1960 issue of this *Journal*.¹ The article examines a series of studies of the effects of the \$1.00 minimum wage, prepared

¹¹ Everything that is said concerning this category applies, *mutatis mutandis*, to the dynamic and historical category as well.

¹ George Macesich and Charles T. Stewart, Jr., "Recent Department of Labor Studies of Minimum Wage Effects," *Southern Economic Journal*, April 1960, pp. 281-290.

by the Bureau of Labor Statistics and the Wage and Hour and Public Contracts Divisions, U. S. Department of Labor. The studies were based on field surveys conducted by BLS. The article also considers data on minimum wage enforcement, prepared by the Divisions.

Unfortunately, the article cannot be cited as a model of critical analysis. We feel that it reflects misunderstanding of the nature and objectives of the survey program. One of our concerns is that its appearance may deter students of minimum wage problems from using the large body of data incorporated in the studies. Our major comments are presented in the numbered paragraphs below.

1. Macesich and Stewart state (p. 281) that the purpose of their paper "is to examine the consistency between the BLS data on minimum wage effects and economic theory." On p. 282, they conclude with respect to employment effects that "the data are better than no data at all, but not much." Still later (p. 286), they write that the studies do "yield data that are consistent with the inverse relation between wage changes and employment changes implied in the competitive model." This latter finding, incidentally, was anticipated by the Secretary of Labor in a letter to the Congress dated January 31, 1959.² The Secretary stated that "the surveys present evidence of disemployment apparently related to the increase in the \$1.00 minimum, despite the fact that the economy was rising at that time and there were increases in the general level of prices which facilitated adjustment to the \$1.00 minimum. Employment tended to decline in the low-wage industries, and in most cases markedly in those segments of the low-wage industries where wage rates had been increased most."

2. It may seem surprising, in view of their generally adverse reaction, that the authors also find (p. 286) that "the evidence presented in the BLS studies on changes in machinery, equipment and methods following the \$1.00 minimum wage are consistent with the substitution implications of a competitive model." The discussion of factor substitution rests largely on paragraphs and sentences taken verbatim, without direct citation, from a 1958 article in the *Monthly Labor Review*.³

3. In connection with these first two comments, the fact should be emphasized that the studies were not explicitly designed to "test" the "competitive model" or any other abstract model of economic behavior. Their aim was more prosaic. Within the

limits of the resources available, and the technical limitations inherent in large-scale statistical inquiries, the intention was to supply as much information as possible on the simple question: "What happened to wages and employment in selected low-wage industries and labor markets when the minimum wage was increased from 75 cents to \$1.00 an hour?" This was surely a useful if modest objective. It is perfectly appropriate, of course, for anyone to use the data, insofar as possible, to test any economic model whatever. Macesich and Stewart do venture to conclude (p. 290) that "the competitive model [on the basis of the survey data] does appear to have predictive validity." They hasten to assure us that "the implications of competitive theory have [not] been rigorously tested." As suggested above, we are in agreement with this latter conclusion. Indeed, one of the authors of these comments elsewhere observed with reference to the 1955-57 minimum wage survey program: "It should be plainly stated that these various studies do not answer all of the questions that economists raise with respect to the economic consequences of a minimum wage. The principal reasons are the limits to the reporting burden that can be imposed upon employers, the lack of availability of records to match precisely the concepts of economic analysis, and the fact that statistical studies can rarely isolate the several variables that affect through time the wage-employment relationship."⁴

4. BLS is severely taken to task (p. 282) for failing to take account of "the trend toward uncovered plants or employment in these plants." At several points (e.g., p. 284), "uncovered plants" are identified as those employing fewer than 8 workers. Actually, size of plant is not a test of coverage under the Fair Labor Standards Act. Employees of plants employing fewer than 8 workers are subject to the Act if they are engaged in commerce or in the production of goods for commerce and are not specifically exempt.⁵ Macesich and Stewart unaccountably ignore the fact that the survey program did include

² H. M. Douty, "Some Effects of the \$1.00 Minimum Wage in the United States," *Economica*, May 1960, pp. 139-140.

³ Macesich and Stewart may have confused coverage under the Act with the coverage of the BLS surveys, where size-of-establishment cutoffs were generally used. In a number of industries, the BLS surveys related to establishments employing eight or more workers at the time the establishment lists were compiled. The reason was economy in the use of survey resources. The inclusion of establishments below the cutoff points would have contributed little to the survey results. This assumption (based on the comparatively small aggregate employment in such establishments) was explicitly tested in the case of the southern sawmilling industry (see BLS Report No. 113, p. 6, note 18).

⁴ See Transmittal Letter by Secretary of Labor to Report Submitted to the Congress in Accordance with the Requirements of Section 4(d) of the Fair Labor Standards Act (1958).

⁵ See Norman J. Samuels, "Plant Adjustments to the \$1 Minimum Wage," *Monthly Labor Review*, October 1958, pp. 1137-1142.

three industries containing significant segments of noncovered or exempt employment. These industries are fertilizer, for which separate data were presented for establishments engaged solely in *intra-state* commerce, and whose production workers therefore are not subject to the Act (BLS Reports Nos. 111 and 132); canning and freezing, where separate data were presented for plants whose employees may qualify for the "area of production" exemption of the Act (BLS Reports Nos. 117 and 136); and southern sawmilling, where separate tabulations were given for establishments employing 12 or fewer loggers (in which case the exemption for logging workers of employers with not more than 12 such workers would generally apply) and establishments with 13 or more loggers (BLS Reports Nos. 113 and 130). Indeed, specific reference is made (BLS Report No. 130, p. 12) to the shift in employment between the two size groups since the Bureau's 1949 survey in the sawmilling industry.

5. There is an even more surprising omission in the analysis of the survey program. A whole group of studies on a labor market basis were made of wage distributions and employment in both subject and nonsubject industries. The labor markets selected for study were among those in which the new minimum had a heavy impact on the wages of covered workers. The purpose of this group of studies was to gain some insight into the "outward" effects of a higher minimum wage. This was a distinct innovation in minimum wage effects studies. Macesich and Stewart devote no attention whatever to these studies, except for a passing reference to their existence (p. 281).

6. The choice of the initial survey periods is subjected to criticism. It is stated (p. 283) that "it is possible that employment and other operational characteristics of low-wage firms in the base period reflected anticipatory reactions to the new minimum." Insofar as highly seasonal industries are concerned (e.g., canning and freezing), it seems clear that the same seasonal level of operation must be studied prior to and subsequent to the effective date of a higher minimum wage if any insights are to be derived from the studies. There is no apparent way to measure anticipatory wage or employment adjustments in highly seasonal industries during periods of nonoperation. For the nonseasonal industries included in the program, with the exception of two industries for which recent BLS data were available, information was obtained for two periods prior to the effective date of the Act precisely for the purpose of permitting "an analysis of the extent to which employers may have sought to adjust wages gradually prior to March 1 [1956], as well as the extent to which mandatory adjustments were made upon the effective date of the new mini-

um rate."⁶ In fact, detailed tabulations were provided on this point for each of the applicable studies.

7. Macesich and Stewart must consider the following (p. 284) to be the most serious defect in the BLS studies, since it represents their sole use of italics: "*Since the surveys include neither plants that began or discontinued operations during the periods surveyed nor uncovered plants, the data on employment changes in the studies contain a bias in an unknown direction.*" We can only conclude from this statement that our critics have ignored the full BLS survey samples which do, of course, include new establishments and account for those that had left the industry. With respect to the matched samples of identical establishments grouped by degree of minimum wage impact, we know of no method by which degree of impact can be determined for plants entering an industry subsequent to the effective date of a higher minimum.⁷ The degree of impact tabulations, incidentally, are cited at another point (p. 283) in the article as "a distinct improvement over previous studies...."

8. The authors point (p. 284) to the absence of any data on the sampling variability of the survey results, and hence to their inability to judge the significance of the results. By significance in this sense they do not appear to refer to the economic significance or meaning of the results, but to the likelihood that a census of all establishments of the kinds studied would have yielded results different from those obtained from the samples. Although the samples reflect the universe in each period, and were designed to provide unbiased estimates, the bulk of the establishments in each industry and area sample was common in all periods. Therefore, the sampling variability must be small for *measures of change*, which are of major interest and importance, and considerably less than the errors of the estimates for the individual periods. The wide variety of statistics presented in these surveys makes a compact presentation of standard errors practically impossible, since no single estimate would apply to all items. Literally thousands of computations of sampling error could be made for

⁶ Norman J. Samuels, "Effects of the \$1 Minimum Wage in Seven Industries," *Monthly Labor Review*, March 1957, p. 323.

⁷ Data for matched samples of plants, classified by degree of minimum wage impact, were not published in the BLS survey reports; these data were provided in the form of special tabulations to the Wage and Hour and Public Contracts Divisions and were used by that agency, in conjunction with other data, in the report submitted to the Congress in January 1959 under Section 4(d) of the Fair Labor Standards Act.

individual items and their period-to-period changes. With respect to errors of response, we point to the fact that these surveys were made by personal visit of trained Bureau field representatives, and that the data, for the most part, were taken directly from the payroll records of the employers in the samples.

9. Several points need to be made with reference to the discussion (pp. 288-290) of enforcement statistics in relation to the minimum wage. The enforcement experience of the Wage and Hour and Public Contracts Divisions shows clearly that the great majority of employers voluntarily comply with the Fair Labor Standards Act. As reported by the Divisions, there was a small increase in minimum wage violations in the months following the effective date of the \$1.00 minimum, as compared with the corresponding period following the introduction of the 75-cent minimum.⁹ Most of the violations detected through investigation did not appear to be deliberate; they resulted from lack of knowledge of the requirements of the Act. Lack of knowledge is likely to be a particular problem in industries composed of relatively small employers. The discussion by Macesich and Stewart of the "evasion" effect of a higher minimum wage appears to assume perfect knowledge on the part of the non-complying employers. Surely account should be taken of the lack of knowledge factor. Their suggestion (p. 288) that "avoidance" of the Act can be accomplished by "split-ups and firings to reduce the number of employees to less than eight" may perhaps be cited in this connection.

10. More specifically, it is inappropriate to use trends in the amounts of underpayment disclosed by investigation (p. 288—Table II) as an indication of trends in noncompliance. Amounts of underpayment disclosed by investigation increased between fiscal years 1955 (i.e., just prior to the effective date of the \$1.00 minimum) and 1957 for several reasons unrelated to any tendency toward increased evasion that the higher minimum may have occasioned. First, the budget for enforcement was increased in fiscal 1956. The Wage and Hour and Public Contracts Divisions were thus able in 1956 to hire and train new investigators. This augmented staff made more investigations and disclosed more underpayments in 1957. Second, the amounts of underpayment disclosed by investigation typically include underpayments occurring during a two-year period. It follows that investigations made in fiscal 1957 cover a longer period of "exposure" to the \$1.00 minimum wage than the investigations made in 1956. Third, improvements in investigation pro-

gramming described in detail in the 1957 and 1958 *Annual Reports* of the Divisions have resulted in a better selection of establishments for investigation. A larger proportion of investigator time is now being spent in establishments where larger underpayments are most likely to occur. Actually, the only available information on the overall extent of noncompliance is that provided by a special compliance survey conducted by the Divisions in 1957. It was estimated on the basis of that survey that the amount of minimum wage underpayments occurring annually was about \$25 million in all industries subject to the Act. The higher figure of \$80 million cited in the article related to both minimum wage and overtime underpayments in those industries included in the compliance survey. An estimate of total underpayments for all subject industries would be somewhat higher.

11. Macesich and Stewart conclude generally (p. 290) that BLS should adopt a "sounder methodological approach" in future studies. "If the relevant data are made available in usable form," they write, "independent researchers can then proceed to shake out their implications. The Bureau would then be performing a really useful service." We welcome suggestions on methodology from independent researchers and others, but the ideas advanced in the present instance appear largely to reflect either inattention to or misunderstanding of what was actually done. In saying this, we wish emphatically to add that the program under consideration had limitations. Certainly many of these were pointed out in the published reports and summary articles issued by both BLS and the Divisions. Some were inherent in a cross-section approach to the problem, which involved surveys at discrete time intervals, and some, no doubt, reflect the intractable characteristics of the real world with which we had to deal. We must state, however, that we know of no other country in which there exists a fund of information on the effects of a higher minimum wage remotely comparable in size or depth with that developed in the program under discussion.⁹

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U. S. Department of Labor*

⁹ Wage and Hour and Public Contracts Divisions, *Studies of the Economic Effects of the \$1.00 Minimum Wage: Interim Report*, March 1957, p. 3.

⁹ A complete listing of the reports and summary articles issued in the 1955-57 minimum wage effects studies program may be obtained by writing to the Division of Wages and Industrial Relations, Bureau of Labor Statistics, U. S. Department of Labor, Washington 25, D. C.

MACESICH AND STEWART ON MINIMUM WAGE EFFECTS STUDIES: REPLY

We do not wish to discourage students of minimum wage problems from using Department of Labor studies, but would like to warn them of some booby traps. It is also our hope to contribute to the improvement of future efforts to assess minimum wage effects, since the problem will clearly be with us indefinitely.

The Department of Labor is the public guardian of some vital economic and social weights and measures. Its methods should be subject to continuous and careful scrutiny. Our criticism of these studies does not necessarily imply criticism of the responsible agency. Our concern is with methodology. Some of the deficiencies are attributable to the irreducible coarseness of the data; some to the cost of collecting more or better data. We are not competent to judge. However, we believe that Messrs. Douty and Schiferl make a basic methodological error in believing that a useful statistical study can be made without an underlying theoretical foundation. Otherwise the investigator is guilty of the all too common practice of "counting man-hole covers."¹ Theory must underlie both the collection and interpretation of statistical information.

The remainder of our remarks are geared to the numbered paragraphs in the Douty and Schiferl Comment.

Paragraphs 1-3. The gist of these comments seems to be that our conclusions are contradictory: that we find the Department of Labor data consistent with a competitive model, but also find the data little better than no data at all. There is no contradiction. To say that the data are consistent with the implication of the competitive model with respect to minimum wage effects does not mean that they confirm it, as we make clear on page 290. The aim of the BLS is not only "prosaic" but jejune. As already mentioned, an investigator does not know what data to collect in order to find out "what has happened" unless he has some theoretical model in mind.

The discussion of substitution is mainly a condensation of BLS material, as we state; "Before we turn to the findings of the survey, a brief summary of the limitations noted in the BLS studies is useful..." Our summary is, as far as feasible, in the words of the original, for the obvious reason of minimizing errors of interpretation. The source from which most of this discussion is obtained, and which we are accused of using without attribution, is listed in footnote 5, page 281. Footnote 18, page 286, refers to footnote 5. There is a lack of imputation

to the several sources referred to, in which we may have erred. The nature of the material does not seem to us to call for detailed paginated attribution, a procedure which would unduly inflate the number of footnotes in the article.

4. Our use of the employment criterion for minimum wage coverage is a mistake. Douty and Schiferl correctly analyze one of its causes, the other being confusion with unemployment compensation coverage criteria. This eliminates one of two mechanisms of coverage avoidance, leaving only the shift from interstate to intrastate commerce. We certainly do not make much of this. In fact we don't know what to make of it, as we have no data. Does anyone? With reference to footnote 5 in paragraph no. 4, we do not suggest inclusion of uncovered plants in the sample survey, but rather the need for information a) on the effects of the higher minimum on actual transfers from covered to uncovered status; b) differential drop-outs, and differential entry rates, by covered and uncovered industry segments; and c) differential changes in the number of employees per firm by covered and uncovered segments.

5. We did consider studies of low-wage communities, as indicated in our footnote no. 5. Our decision to concentrate on the industry studies was based on the conclusion that the results of the community studies were even less meaningful than those of the industry studies; that they did not fill any of the measurement or methodology gaps noted in the industry studies. The analysis supporting our conclusion would require another article. In brief, the problem of isolating the consequences of the \$1.00 minimum on employment in a community from the great variety of determinants of that community's growth in population, labor force, employment, and wage levels is much greater than the corresponding problem for specific industries. The dispersion in community growth rates is enormous; the dispersion in the sample communities is sizeable; the sample is not random. It is quite impossible on the basis of the collected data to determine either direction or magnitude of minimum wage effects on community growth. To the extent that the community studies measure the impact of the \$1.00 minimum on uncovered employment, they are limited mainly to the direct "payroll" effects, since these effects are concentrated in the community. These payroll effects depend both on employment changes in covered industries, and on average wage changes. Implicit in the studies is a crude economic base model, with the covered industry as the base. "Production" effects, which are in considerable degree dissipated far outside

¹ We are indebted to James M. Buchanan for this expression although he has no connection with the present paper.

the community, through changing demands for inputs, and for services complementary to distribution of outputs to ultimate markets, are not sufficiently included. Their consideration requires a linear programming approach with no geographical limitations. In brief, even if the community studies were not outstanding examples of data without theory, they would not complete the picture of employment effects of the \$1.00 minimum.

6. This paragraph confuses two separate points. The first is that, for *some* of the industries surveyed, the survey periods used incorporate a seasonal bias which is reflected in the resulting data. This is made clear by our footnote no. 1 to the table on page 286. Obviously we are not concerned with industries which operate only a few weeks each year. The second point is the possibility of bias introduced in the data by actions anticipating the higher minimum. This possibility exists for those industries surveyed before the minimum went into effect, but *after* it had been enacted by Congress. Douty and Schiferl oddly enough refer to studies of anticipatory wage adjustments in nonseasonal industries (is there such an industry?). We are talking about adjustment in *employment and hours* (see page 283). These were mentioned only for two industries, as we pointed out there. We were puzzled by the inclusion of relevant data, such as anticipatory reactions and changes in employment, in uncovered sectors for one or two industries, and their omission without explanation in all the others, even though the reasons were far from self-evident in a number of cases. We are still puzzled.

7. We agree that there is no way of tabulating the degree of impact for firms entering the industry after the initial survey, or leaving it before the follow-up survey. That is precisely the reason we object to the "matched sample" technique. We are fully aware of data on attrition, as shown in our page 285. Neither the data on dropouts nor on new entries is useful in measuring the employment and related effects of the \$1.00 minimum unless we know what part of the attrition can be attributed to it, and to what extent the higher minimum reduces the rate of new entries. We have seen no figures or estimates on either point. Yet in many industries the main changes in employment result from changes in plant births and deaths, rather than through changes in average employment per plant. It is entirely conceivable, and even reasonable, to expect employment in the matched sample to rise, while employment in the entire industry falls. This consideration alone invalidates the matched sample approach and all employment data derived from it.

8. No comment. The reader is referred to any reliable statistics textbook.

9 & 10. Our purpose in presenting enforcement statistics was to show that evasion is one of the

reactions to a higher minimum. To the extent that evasion is easy, and is widely resorted to, the employment and other economic effects of the higher minimum are reduced. This is unquestionable, whether evasion is intentional or due to ignorance. We further suggest that some evasion is deliberate. The evidence that low-wage areas have a higher rate of violations is clear-cut, but not confirming. The sudden increases in violation rates following imposition of higher minimum we suggest is confirming. The ignorance hypothesis, although a reasonable explanation of increased violation of the minimum wage, cannot as plausibly account for the large increase in overtime premium pay violations. Douty and Schiferl suggest that sudden large jump in violations in fiscal year 1957 can be explained by other means: larger number of investigators, etc. We agree that part of the increase can be attributed to these factors. But not all; after all, the number of employees underpaid on the minimum tripled. We mentioned the increased number of investigations on page 289, although perhaps we should have given this point greater emphasis. There was another jump in fiscal year 1952. *Ad hoc* explanations cannot account for the cyclical nature in the number of violations, which jumps up after the minimum is raised, then steadily declines. Are we to presume that investigators are on the ball the first year of their employment, and steadily decline in effort and achievement thereafter? We are glad to have the point clarified that estimated violations totaling \$90 million include overtime violations. The reader of our article would have to refer to the table on page 288 in order to infer this from our text on page 289. The importance of overtime violations seems to deserve further study.

11. Messrs. Douty and Schiferl are fortunate to be in a country where the national government makes such adequate appropriations for the gathering of statistics. Our main concern is that these statistics become better and more directly pertinent to questions of public policy.

Since some of the criticisms in our article were made as far back as 1957,² we feel that by now the Department of Labor should have either corrected its methodological shortcomings, or provided convincing justification for their retention. To our knowledge it has done neither, except for paragraph no. 8 in the Douty-Schiferl Comment. We doubt that the Department will "welcome suggestions on methodology from independent researchers and others," to the extent of actually incorporating them in the Department's studies.

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²John M. Peterson, "Employment Effects of Minimum Wages, 1933-1950," *Journal of Political Economy*, October 1957, pp. 412-430.

BOOK REVIEWS

Introduction to the Theory of Interest. By Joseph W. Conard. Berkeley, Calif.: University of California Press, 1959. Pp. xx, 375. \$7.50.

This is a most useful volume. It is not primarily a statement of the author's own theory of interest. The author indicates that he is building a foundation for a later volume in which his theory is to be set forth, no doubt somewhat as Böhm-Bawerk did in his *Capital and Interest*, followed by his *Positive Theory of Interest*. He builds this foundation by an analysis and comparison of previous theories of interest, covering not only authors now commonly relegated to the history of economic thought, but later writers such as Lerner and Hicks as well. The author's analytical picture of the modifications of the neo-classical theory is particularly useful.

Fortunately, this re-exploration of the history of the doctrines of interest is not done in an antiquarian spirit at all. Instead the author is only interested in past theories as they have relevancy to the theory of interest at the present time. He has done an admirable job of analysis, comparison and synthesis and one which badly needed doing. The reviewer does not know of any other source where the elements in the interest theories of Böhm-Bawerk, Fischer, Schumpeter and Knight are so well integrated with the later doctrines of interest such as the liquidity preference and loanable funds doctrines. This is of the greatest importance since some of the most basic problems of interest theory were dealt with by the earlier writers. Their analysis is now often either taken for granted or disregarded.

For example, a problem basic to the theory of interest is this: If one agrees that either the marginal productivity of capital, the marginal efficiency of capital, or the marginal efficiency of investment is important in the theory of interest, what is the difference or similarity between these concepts? Above all, why should curves representing any of the three have a negative slope? Could this negative slope exist without the assumption of diminishing returns and could diminishing returns exist unless differentiated factors such as land, labor and capital were assumed to exist? The validity of the concept of factors has often been questioned but often without recognition of what the elimination of the concept would mean to interest theory. Knight, Fischer, Schumpeter and the author have something to say on this.

The organization and outline of the book is rather peculiar. Quotes, appendices, summaries, and summaries of summaries are interpolated al-

most at random. Yet this reflects the determination of the author to clear up points which would be left in the air unless he doggedly pursued them through working out illustrations, setting up particular cases and the like.

The division of his subject into the monetary and non-monetary types of interest theories is useful. The section devoted to the time structure of interest rates is excellent; more logical and institutional than Hicks' treatment of the subject, for example. Although the work is so largely theoretical, an effort is made in this section to test theory by the examination of empirical data.

This book will be of the greatest value to anyone, like the reviewer, who is confronted with the task of providing a common background of information for graduate students dealing with the theory of capital and interest. Individual students can be required to deal intensively with only some finite number of articles on a particular phase of the subject. It is just not feasible to expect all the students in a seminar to read all the necessary articles on the subject, scattered so widely in space and time as they are. Conard's book is a God-send to meet this need, at least in part.

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Beyond the Welfare State. By Gunnar Myrdal. New Haven: Yale University Press, 1960. Pp. xii, 287. \$4.50.

This book is an enlargement of the *Storrs Lectures on Jurisprudence* delivered at the Yale Law School in 1958. In it this well-known Swedish economist sets as the world's goal international specialization with its corollary "free trade." This will, he hopes, give us a Welfare World in which "liberty, equality, and brotherhood" will be realized in addition to the adequate serving of economic needs.

This is, of course, the goal set by the 19th century economists, but the road to it, according to Myrdal, is far removed from the earlier one. His road is "economic planning," while the other was *laissez faire*.

National planning—the Welfare State—is an accomplished fact in the Western countries, we are told. This has not, however, been according to plan. We are planning without planning. "This has all happened in a piecemeal and almost off hand way." Some fields have been neglected because of naughty words associated with them, such as "socialized medicine," and the fear of taxes has retarded desirable projects. But in general the

"gospel" for businessmen and politicians has been, and is, the maintenance of a "free" economy, but their "daily labor" has been regulation, intervention, and participation.

Myrdal disassociates himself from Marx by noting that "Marx was not a planner but an analyst and a forecaster," and that "the essential idea of economic planning in the democratic Welfare States of the Western world... is entirely foreign to Marx's way of thinking." "In essence, planning is an exercise in a non-deterministic conception of history...."

Myrdal states further that the issue as to the choice between a "free" versus a "planned" society is "shallow, unrealistic, sterile," and that he will not engage in the "old, stale controversy between two unworldly abstract conceptions."

Our author classifies the countries of the world into three divisions: The rich (Western) nations; the non-Soviet underdeveloped ones; and the Soviet countries. In the first group, planning has come in a haphazard but grassroots sort of way as already noted; in the second group it is being imposed from above; and similarly in the Soviet group though with an unexampled ruthlessness. His principal concern in the first part of the book is with how the rich Western nations have achieved planning without ever making it a policy.

Myrdal misses, it seems to me, a very important factor in the movement toward the Welfare State, namely, the technological development of the past one hundred years. He refers to technical changes only infrequently and then in a very casual sort of way.

But certainly from the very beginning of human life new techniques almost necessarily compelled men and women to alter their customs, rules, and laws. The Cain and Abel story takes on increased significance in this perspective. Cain was attempting to establish the new technique of farming in the face of the old way of life—sheep-herding. This made private property in land, fences, and liability of sheep-herders for damage done to crops necessary if the new and far more productive technique was to be used.

Considering our own case the railroad, other public utilities, mass production for wholly unknown consumers, mass employment, the reversal of population from 90 per cent on farms to 90 per cent in towns and cities, radios, television, transcontinental airplanes, and all the rest have made new institutions—planning—inevitable. Universal suffrage on which Myrdal lays much stress as a cause is, in the first instance, an effect of the invention of printing, and the continuous development of higher and wider standards of living as new techniques have made this possible, or indeed have forced this upon us.

Myrdal makes an interesting point that the continuous development of certain trends leads to less government in certain areas. As Economic Welfare becomes a cultural pattern, regulations may be abandoned. Laws governing employer-employee relations are illustrative of this, and he adds that perhaps soon in America "there will be no practical need to retain legislation, courts, and administration to defend Negroes against discrimination in the labor market and elsewhere." Furthermore, the mere discussion of abuses and the threat of legislation are often enough to correct the evil.

Myrdal emphasizes the shift of activities and regulations from national (state, as he puts it) to provincial and municipal organs of government. This is certainly not apparent in this country. In finance, industry, and agriculture our regulations and controls are and must be nation-wide. Even schools, with our highly mobile population and our mass production of goods, services, and reading material, become vested with a national interest.

Myrdal feels stymied when he finally comes to the part of his book that embodies the title: *Beyond the Welfare State*. For the very fact of the development of the Welfare State tends to promote intense nationalism with a deeper antipathy for foreigners, higher protective tariffs, more aloofness in finance, and so on.

He does not emphasize sufficiently that perhaps from the very earliest days of human life the foreigner—the outlander—has been suspect in almost every community. His unintelligible speech, his manners, his smell, and the depredations of at least other foreigners have made him unwelcome. Our speech indicates this with its dozen or more ways of saying "go away" to one that says the opposite. And in the long history since these early times, discords and wars have intensified national animosities. Hence, says our author, "Scratch almost anybody, and you find a jingoist." There are few, he adds, who can react in any other way than "right or wrong my country."

Myrdal also points to our general reluctance to conform to our highest ideals. "Crime is fascinating." "Novels dealing with adultery have a sale" far beyond the "good" books. The communication industry "plays up what is unfortunate and bad... in response to the demand of... the general public."

"To rise up for a cause and for ideals" makes one "a target for popular abuse" and this tends to leave politics as "the playground of the tough-skinned self-seekers." "There is a deep symbolic truth about our society in the religious myth of the crucifixion of Christ."

Self interests also block the way from the national Welfare State to World Welfare. "That the

oil industry can move the State Department in Washington... is... not surprising. But that, in an underdeveloped country in South East Asia, the American organization for technical assistance does not dare to help the country develop its fishing industry, because it would upset a few American exporters of canned fish, is perhaps shocking to the uninitiated."

Financial aid is relatively easy, he notes, for it is generalized, but the best form of aid may be to admit exports from the countries we wish to help, and that is practically impossible. Yet in spite of all the difficulties Myrdal hopes for the best. He expects business and other interests to come to see validity in world stability.

The overriding need for world unity—world government—is not, it seems to me, economic welfare, but the prevention of the use of the calamitous weapons of warfare that have recently been devised. This, as I see it, can be secured without waiting for an international world Welfare State. That can come later. Badly needed as World Welfare is, freedom from war is indispensable. Here again one can look to technological advance. Besides leading to new institutions—more government—more planning, many, perhaps most, new techniques lead to ever wider and more inclusive areas of government. The vast extent of our country in contrast to the small European nations testifies to the importance of the prevailing techniques at the time the countries took shape—railways versus ox-carts.

Airplanes going three times as fast as sound; radio communication from New Jersey to California via the moon; missiles fired from a submerged submarine; deadly chemicals and bacteria—these and many other devices give military power today that is breath-taking in its implications, and seemingly puts world government with secure controls over war just around the corner. Surely we cannot wait for the economic interests of the peoples of the world to be so unified that world government with control over war will spring into being. Time is of the essence.

Despite his hope for and faith in World Welfare, Myrdal devotes an entire chapter to international disintegration which he asserts has been under way during the past fifty years. "...before the outbreak of World War I there existed a much more closely-knit world community than today." One could travel without passport or visa and with no trouble as to foreign exchange. There was a common labor market, an international capital market, with nations "closely integrated with each other."

On balance it appears to this reviewer that the agencies recently organized and those in process of organization greatly outweigh those of the pre-

World War I era. The United Nations is a going concern and so is the Organization of American States. A common market is being created in Europe with talk of an inclusive political union. Territorial groupings around the world are being advocated; and besides these the International Monetary Fund, the Export-Import Bank, and other agencies are providing a degree of unity among nations that is of great promise. We shall no doubt continue to travel along these lines, and this will lead to the prevention of war before and not after world wide economic welfare has been achieved.

It may also be noted that Myrdal limits his discussion of birth control to the observation that it is "caused by more rationalistic attitudes to the family institution under changing economic conditions." Here again is a problem for which we cannot wait for a solution in "the long run." It is strange that Myrdal having cast off so much of the old economics retains this.

This book deserves a wide reading. It contains much profound thought, along with omissions according to the taste of the reader. It appears to be somewhat repetitious, but that may be a virtue. It is easy to read and should have use in classrooms, but it needs to be emphasized to students that by State, Myrdal means to us our Federal Government, and by provinces our States.

One rejoices in his high hopes for "a more enlightened citizenry" and would like to share with him his belief that "as a social force the ideal of international cooperation is just as real as the nationalistic emotions." But that is asking too much. We can, however, "inch along" and trust that reason will, as Myrdal so earnestly hopes, overcome stupidity.

H. GORDON HAYES

Tulane University

The Stages of Economic Growth: A Non-Communist Manifesto. By W. W. Rostow. New York: Cambridge University Press, 1960. Pp. xii, 179. \$3.75 (cloth), \$1.45 (paper).

This book is said to be "an economic historian's way of generalizing the sweep of modern history" (p. 1). The generalization takes the form of a set of stages of growth which constitute a theory about economic growth and about modern history as a whole. The stages "have an analytic bone structure rooted in a dynamic theory of production" (p. 13)—with population, technology, entrepreneurship, and many other factors taken as variable rather than fixed.

The stages are: (1) the traditional society—one whose structure is developed within limited production functions based on pre-Newtonian science, technology, and attitudes toward the physical

world. The situation is not static and there is some growth and change, but there is a ceiling on attainable output per head. The economy is largely agricultural and the social structure is hierarchical.

(2) The period when "preconditions for take-off" are developed, frequently as the result of peaceful or other intrusion from outside. It is a time of transition with elements from the old period mixed with others from the new. The productivity of agriculture improves greatly and social overhead capital is developed.

(3) The take-off. Old blocks and resistances to steady growth are finally overcome and forces making for economic progress expand and come to dominate the society. Growth becomes normal. The period is short, is frequently touched off by some sharp stimulus, and involves greatly increased productive investment, the development of manufacturing, and considerable changes in the social and political framework.

(4) The drive to maturity—an interval of sustained progress and heavy investment lasting about 40 years. Modern methods and techniques of production are applied broadly over the whole economic front. The period is also marked by changes in the working force, changes in leadership, and eventually some boredom in regard to the miracle of industrialization.

(5) The age of mass consumption. A mature economy may turn to attempts to extend its external influence and power, or to goals of social welfare and security at home, but the most common result of maturity is high mass consumption with a shift toward durable consumers' goods and services.

Much illustrative material is presented to show the development of the various stages in different countries. The differences between countries are shown as well as the similarities. Beyond the age of mass consumption several possibilities for further change are available but no reliable predictions can be made.

Although some differences are obvious, Russian economic development over the past century is said to be remarkably similar to that of the United States with a lag of about 35 years in the level of industrial output and one of 50 years in the per capita output of industry. And Russian economic development falls well within the stages-of-growth analysis. The author feels that there is little danger in the rapid rate of growth of Russian gross national product both because of the probability of deceleration and because this growth will be all to the good if the military threat can be contained effectively. The non-Communist countries need to keep on going themselves instead of worrying about the Russians.

Wars are not caused by growth. The concepts

of nationhood, national sovereignty, and the legitimacy of war as a reserved instrument of national policy were inherited from the world of traditional societies and antedated the development of the stages. Going through the stages has only changed the character of wars. The author distinguishes colonial wars, wars of regional aggression, and massive wars for world power. The last have arisen from efforts of countries to exploit their newly achieved maturity and from the temptations afforded by the vulnerability of still traditional societies.

At present we have tremendously powerful weapons and instruments of war but greatly reduced ability to use the available weapons with any hope of gain. We must prepare to live in a world of mature economies all well armed. No one country can hope to control such a world and a diffusion of world power must be expected. An effective international system of arms control is necessary for peace.

Russian cooperation in this project would involve the abandonment of the notion of world domination, but Russia is committed to the goal of the victory of international Communism. Moreover, cooperation would involve great changes within Russia, and the old propositions concerning external hostility, police-state control, and the need for austerity would have to be given up in favor of an open society and high mass consumption. We must show that we will not let the Russians get far enough ahead to make an attempt at military solution promising, that the Russians themselves have an interesting and lively alternative to an arms race or unconditional surrender, and that underdeveloped nations can move through the preconditions into a well-established take-off within the orbit of a democratic world. The last project is considered especially important.

Mr. Rostow shows that his stages-of-growth analysis deals with the same problem which Karl Marx handled by way of feudalism, bourgeois capitalism, socialism, and communism and notes several broad similarities between the analyses. But he also points out many significant differences and indicates the errors in the Marxian approach from his point of view. He concludes that "Marx belongs among the whole range of men of the West who, in different ways, reacted against the social and human costs of the drive to maturity and sought a better and more humane balance in society" (p. 158), and regards Communism as a disease of the period of transition.

The author states that his is an arbitrary and limited way of looking at the sequence of modern history. He admits that his analysis deals only with particular factors of reality and cannot be considered as correct in any absolute sense. Indeed,

as noted above, it dramatizes differences as well as similarities in the experiences of various countries.

It is virtually impossible to prove anything in the author's chosen field, but his account is interesting, stimulating, and provocative. It may not convert many Marxians, but most economists will prefer it to Marx's analysis. This result will be due only in part to the fact that Mr. Rostow had all the advantages of the "Monday-morning quarterback" in dealing with the problem with which Marx tangled. Mr. Rostow's work is well written, it deals with some vital issues, and it deserves to be widely read.

RALPH H. BLODGETT

University of Florida

The Rise of American Economic Thought. By Henry W. Spiegel. Philadelphia: Chilton Company, 1960. Pp. xi, 201. \$5.00.

The need for available material, for use by students and laymen, on the contribution of American writers to economic thought has long been recognized. This new volume by Professor Spiegel, though limited in scope and inclusiveness, fills in considerable measure a vacuum that has existed in our literature. His book consists of selections from the works of leading American economists, with a brief factual comment about each writer, and covers the period from the early seventeenth century to the founding of the American Economic Association in 1885.

The purpose of the author is to present a source book which will be useful in stimulating interest in the history of ideas. Emphasis is placed on the rise of economic thought which, *pari passu*, has evolved along with the development of the laissez-faire American economic system to its full bloom in the nineteenth century. Thus the volume falls into an intermediate position between the monumental work of Dorfman in *The Economic Mind in American Civilization*, which has limitations as a text, and monographs of a specialized nature, such as John R. Turner's *The Ricardian Rent Theory in Early American Economics* and O'Connor's *Origins of Academic Economics in the United States*.

Most of the early American writing on economic questions was normative and pragmatic and contributed little to economic science. Statesmen like Franklin, Hamilton and Jefferson were more concerned with current issues than with abstract economic theory, though Jefferson translated and wrote the introduction to a French text on political economy which was published in this country. Systematic treatises by such men as Cooper, List, Rae, Tucker, Walker and others drew heavily on the works of European writers, although generally

American economists dissented from the doctrines of Malthus on population, Ricardo on rent, and often from the virtues of free trade as contrasted with the advantages of protective tariffs.

In the environment of the new country it was hard to visualize inherent dangers from the growth of population or the forced resort to cultivation of inferior land and there appeared to be no imminent danger that the standard of living might fall because of a scarcity of natural resources. Following the hardships and struggles of the early colonial period, public opinion moved away from government restraints and toward free competitive markets. The dominant spirit was that of individual initiative and self-reliance, and little thought was given to poverty and insecurity as a responsibility of government.

How are we to explain the failure of early American economists, several of whom were professors of moral philosophy, of which political economy was then a branch, to make important contributions to economic theory? In his article in the *North American Review* in 1876, Dunbar attributed this lack to the preoccupation of American scholars and statesmen in the practical work required in the development of a new country. Fetter has asserted that while it was not remarkable that American economists before 1880 should have been almost ignored in Europe, it was surprising that they should have been so "forgotten and neglected by their own countrymen." They were, of course, widely separated in time and place, and hence did not unite to found a particular school of thought. Spiegel regards J. B. Clark as the first American economic theorist who could "claim the attention of the world" and who marks the beginning of a new epoch.

The author has read widely in his selection of excerpts from the works of the twenty-two writers here represented. He has rendered a highly useful service to students and teachers of economic thought. In the mind of the reviewer, however, the volume would have been more complete if certain other economists had been included—notably Calvin Cotton, Thomas R. Dew and Henry Vethake.

Cotton wrote his *Political Economy for the United States* in 1848 and edited the works of Henry Clay. Dew, who taught political economy at William and Mary College beginning in 1827, defended on economic grounds both free trade and slavery and through his lectures and essays had much influence in the South. Vethake taught at several institutions and served on the faculty of the University of Pennsylvania for thirty years. His *Principles of Political Economy* in 1838 was a "systematic exposition of the principles of the science as they generally held in England and France" (Palgrave). These writers would seem to

deserve recognition in the group of American economists of the period considered, in which there were several minor but no major prophets.

TIPTON R. SNAVELY

University of Virginia

The Manchester School of Economics. By William D. Grampp. Stanford, Calif.: Stanford University Press, 1960. Pp. viii, 155. \$4.00.

Professor Grampp's study of the Manchester School is a continuation of his inquiries on the history of economic liberalism. Its purpose is, first, to dispel the legend that the Manchester School of economists were ardent disciples of *laissez-faire* and, second, to clarify certain misconceptions with respect to the objectives of the School and its major achievements. In his search for material the author had access to the minutes of the Manchester Chamber of Commerce, Cobden's diaries, letters of John Bright and other sources, but it is on his interpretation of available evidence rather than new discoveries that he wishes his conclusions to be judged.

The name Manchester School did not originate with the Anti-Corn Law League but, according to Palgrave, came from without and has been ascribed to writers in Germany. Grampp mentions Disraeli's contemptuous reference, soon after repeal in 1846, to the "School of Manchester" which, although advocating repeal of the corn laws, had never believed in the reciprocal reduction of tariffs and treaties as a general policy. The author hopes to set straight the erroneous impression created by the various writers on the history of economic thought, that there was a close correspondence between the ideas of the Manchester School and classical economics.

This confusion has led to a "vulgarised version" of classical doctrines. The repeal of the corn laws did not represent a culmination of the *laissez-faire* movement, nor were the two schools united on the issue of free trade and the abolition of the corn laws. On this question Professor Viner asserts that "the dogmatic exponents of *laissez-faire* of the time were the Manchester School . . .," whereas J. S. Mill "gave only a very qualified adherence to *laissez-faire*."¹ Menger, on the other hand, held that Mill was the true descendant of classical political economy rather than Cobden, Bright and Bastiat.²

¹ Jacob Viner, "Bentham and J. S. Mill: The Utilitarian Background," *The American Economic Review*, XXXIX (1949), p. 381. Also see Viner's article on Alfred Marshall, *American Economic Review*, XXXI (June 1941).

² See T. W. Hutchison, *A Review of Economic Doctrines* (Oxford: The Clarendon Press, 1953), p. 151.

There are several arguments which the author advances in support of his thesis that the Manchester School is not to be identified with the classic liberals. For example, while Cobden and Bright fought for the repeal of the corn laws their attitude on a general policy of free trade was complex and not wholly consistent. Also both Smith and Ricardo qualified their advocacy of free trade. They placed national power above wealth in importance to the state. Smith approved of the Navigation Laws on the ground that they were necessary for national defense. Ricardo was opposed to free trade only because he believed it would make for inefficiency. When there appeared to be a conflict between the objectives of national power and an increase in wealth the classicists chose national power. The great passion of Cobden was the attainment of peace and for him other principles were subordinate to this goal. He and other pacifists "chose wealth over power because they believed free trade would make war intolerably expensive."

The style of the book is forceful and the author has marshalled his facts and arguments convincingly. He spent a year in England while examining original records and material. He has sought to look beneath the obvious and gain a full understanding of the objectives which motivated the movement for repeal. The comprehensiveness of his study has enabled him to cast in truer perspective the doctrines of the Manchester School in relation to the classical writers.

TIPTON R. SNAVELY

University of Virginia

Soviet Economic Warfare. By Robert Loring Allen. Washington, D.C.: Public Affairs Press, 1960. Pp. x, 293. \$5.00.

The Soviet Bloc Foreign Economic Relations Project, which Professor Allen directed at the University of Virginia from 1956 until 1959, has undertaken the immense and fascinating task of analyzing foreign economic policies and activities of the nations of the Soviet bloc, and of focusing especially upon policy toward, and activity in, the underdeveloped countries. More than twenty scholars have written more than fifty studies in association with the Project, most of which have been published, and all of which but this book are concerned with particular facets of the topic. The book stands apart from the other studies in drawing together many strands of work completed in the Project and in enlarging upon that work in order to present "a comprehensive account of the major features of Soviet bloc foreign economic relations."

The theme rests upon Premier Khrushchev's challenge, "We declare war on you in the peaceful

field of trade." The scope is confined to "the character and dimensions" of that war, begun after Stalin's death, and does not deal with the more orthodox concepts of economic warfare found in international law under such headings as seizure, embargo, and blockade. The warfare consists of programs of trade and assistance which are engaged in primarily for political gain.

In the first six chapters, altogether about one-third of the text, the author erects a "conceptual framework" for review and analysis of the warfare. These chapters, apparently, are new materials, not being based upon the earlier work of the Project. Unfortunately, they lack the precision and clarity which is ever helpful in exposition of fresh materials and in exploration of new fields. This flaw is found even in the "overriding" conclusion of the study: "*The Soviet Union uses all of its foreign economic policies and relations consistently and exclusively to promote the interests of the Soviet state and the philosophy on which it is founded. Trite as this may seem it remains highly important to bear in mind that no other nation in the world has this posture*" (p. 3. Author's italics). The statement is indeed trite if "posture" refers to promotion of the interests of the Soviet state and the philosophy of communism, and to nothing more whatever, for not even a European satellite, much less a non-bloc nation, promotes exclusively the interests of the Soviet state. Perhaps the passage is intended to convey that no state, other than the USSR, uses all of its foreign economic policies and relations consistently and exclusively to promote its own interests and its own political philosophy. But this interpretation also is puzzling. Do some of the foreign economic relations of a Western democratic nation fail to support the interests of that nation and the philosophy of democracy? The thought is vexing, for it broaches the complex realms of political and economic philosophy, of international politics, and of international economics.

Close upon this conclusion is its corollary: "*Soviet warfare, operating in support of Soviet foreign policy and possibly with some economic benefit to the Soviet economy, is engaged in undermining the efforts of underdeveloped countries to establish equitable economic, political, and social systems*" (p. 3. Author's italics). Quite apart from the troublesome use of "equitable," which hardly describes the direction of change in most underdeveloped countries, is the more troublesome failure of the book to reveal the process of "undermining." The analysis of the motive of "undermining" involves Marxist dogma. Soviet leaders are held to believe that capitalism will inexorably develop toward economic crisis and revolution, and that support of economic development in the underdeveloped

countries will hasten the forces of history and the coming of socialism. The interpretation of motives is reasonable; the acceptance of the logic in Soviet policy is less than reasonable. Is the warfare, one wonders, indeed "undermining" the economic, political, and social systems of these countries? Possibly it is, and certainly it could. But evidence to confirm the existence of such a process is missing. In short, neither the major conclusions of the study nor a large part of the "framework" is clear enough to be useful.

Behind the early chapters—those on posture; on the meaning of economic warfare and state trading; on motives and goals; on capabilities, priorities, and growth—is found a fund of valuable analysis. Chapter VII, on trade organization and commercial policy, is particularly valuable in explaining the techniques employed in the conduct of Soviet foreign trade. Chapter VIII is a detailed analysis of the volume, direction, and composition of Soviet trade in recent years; of the significance to the Soviet economy of trade with Eastern Europe and Mainland China; and of the insignificance of trade with the underdeveloped countries. Chapters IX and X, on economic and technical assistance, reveal, through a host of examples, the political motives of the programs.

Chapter XI, on performance and impact of the Soviet programs in the underdeveloped areas, demonstrates the unreliability of the USSR in trade relations. Soviet trade with these countries has fluctuated more than has Western trade with the same countries, and price gouging is present but not prevalent. The author believes that although the economic impact has been small the political and psychological impacts have been great, accounting in part for the "definite trend" of increasing Soviet prestige and weakening Western prestige.

The last chapters are on the warfare in Asia, in the Middle East, and in Latin America, and its prospects. The prospects are forecast as favorable from the point of view of the USSR: the warfare will expand and its techniques improve. After reading a book which stresses in abundance the dangers of Soviet economic warfare, one is startled by the assurance of the final sentence that the West will somehow win.

WEBSTER C. CASH

Florida State University

Production of Commodities by Means of Commodities. By Piero Sraffa. Cambridge: Cambridge University Press, 1960. Pp. xii, 99. \$2.50.

In this little volume, subtitled "Prelude to a Critique of Economic Theory," Sraffa examines certain relationships of an economic system. His object is to consider a theory of value which is not

dependent upon marginal analysis. This work is obviously incomplete, for all analytical structures are designed for a purpose and the purpose of this one is only hinted at. This is, in effect, Volume 1 of a longer work. This reviewer will resist the temptation to write Volume 2 to demonstrate the usefulness of Volume 1.

Sraffa starts with a simple linear input-output relationship, in which each industry produces a single product and the total production just replaces the goods used up in the process. In this system relative prices can be determined by the need for exchange between industries.

The remainder of the book is devoted to analyzing this system under progressively more complex conditions. Thus, if the society more than replaces itself, relative prices and a (uniform) rate of profits can be derived. When labor is specifically introduced into the system, an indeterminacy appears, with k equations to determine $k + 1$ variables ($k - 1$ relative prices, wages, and profits). This is the result of the absence of any supply functions for either labor or entrepreneurship. As a result, one can analyze the impact on prices as the net product is divided in various ways between wages and profits. Whether the price of a given product will rise or fall as wages rise depends not only upon its own labor ratio but also that of its suppliers.

With this indeterminacy, an ambiguity arises about measurement of national product. At what set of prices should one calculate the relative weight of various commodities? This problem is solved by the construction of a composite standard unit. This unit consists of weighting industries such that the proportion of outputs equals the proportion of inputs. The net output of the system then includes all products in this ratio. This standard unit can then be used as the basis for measuring wages and prices. It is also shown that there is a unique standard unit.

The concept of basic and non-basic product is also introduced. A non-basic product is one which does not enter the production of anything except itself and other non-basics. The basics have the property that changes in their conditions of production affect all prices, but changes in non-basics affect only the non-basics. (A tax on cigarettes affects the price of cigarettes; a tax on steel affects the economy.) Obviously, the standard unit contains only basic commodities, since non-basics need not be inputs at all.

This system can be extended to the case of joint production, with most of the analysis substantially unchanged. From the analysis of joint products, however, certain additional insights flow. In particular, this produces a new aspect of fixed capital. Every process becomes a case of joint production,

since each is producing used machinery as well as its output in the usual sense of the term. This concept indicates that the pricing relationships can be applied to calculating depreciation allowances.

Similarly, natural resources appear as the input counterpart of non-basic outputs. Where non-basics were outputs but not inputs, land is an input but not an output. Hence the familiar doctrine that taxes on land fall only on the landlord.

There are also certain comments on the circumstances under which different methods of production can co-exist.

In looking forward to Volume 2, it would be useful to compare this system with the marginal theory. Its principal advantage is that it is a general equilibrium system. It also handles the problem of fixed proportions, in inputs and outputs, which have caused such difficulties in marginal analysis.

Its major disadvantages are its equilibrium character, its linearity, and its incompleteness. Since it deals only with the conditions of a competitive equilibrium, it can not consider monopoly or the dynamic problems of adjustment. The linearity of the system makes it impossible to evaluate the effects of increasing or decreasing returns. The incompleteness lies in the fact that this is only a theory of value, not a theory of distribution. The indeterminacy on wages and profits is one such case, since no supply functions are given except for products.

Sraffa gives reference to classic sources, but some additional references to the Leontief system, which is quite parallel to this system, would have been very helpful.

This system will not replace marginal analysis, but it will give substantial impetus to analysis of particular problems.

JOSEPH P. MCKENNA

Saint Louis University

Gold and the Dollar Crisis. By Robert Triffin. New Haven: Yale University Press, 1960. Pp. xiii, 195. \$4.75.

Triffin's *Gold and the Dollar Crisis* is in a sense a sequel to his *Europe and the Money Muddle*. He analyzes problems which are of current concern to the staff of the International Monetary Fund and to academic economists throughout the world. He deals with touchy political and economic issues which are debated by vocal partisans, e.g., nationalism vs. internationalism, flexible exchange rates vs. stable exchange rates, bilateralism vs. convertibility, and laissez-faire vs. planning.

The following propositions summarize the argument of the book with a fair degree of accuracy:

1. In an expanding world economy it is difficult

to maintain adequate international monetary reserves. Just before World War II total gold stocks were 110 per cent of world imports and are now less than 40 per cent. Gold stocks are currently increasing at an annual rate of $1\frac{1}{2}$ per cent, whereas the volume of world trade is increasing at a rate of 5 to 6 per cent. Gold alone cannot provide the necessary reserves.

2. To supplement inadequate gold supplies nations have resorted to the use of other nations' currencies—especially dollars and sterling—as international monetary reserves.

3. A world monetary system whose operation becomes increasingly dependent on one or a few national currencies as major components of international monetary reserves constitutes a "built-in destabilizer."

4. The restoration of overall balance in U. S. international transactions will deprive the world of its major source of meeting increasing reserve requirements. The resulting liquidity crisis will necessitate either internal deflation, currency devaluation, or exchange and trade restrictions.

5. Triffin's solution is to convert the IMF into a world central bank for national central banks with the right to accept deposits and make loans. Deposits in the IMF would replace national currencies as international reserves; they would carry exchange rates and convertibility guarantees and would earn interest determined by IMF earnings on its loans and investments. The plan is similar to the one proposed by Keynes at Bretton Woods but with safeguards against inflation and the loss of national economic sovereignty.

Whether or not one accepts Triffin's solution, it must be admitted that recent events demonstrate the unsatisfactory state of present arrangements. When the world was confronted by a dollar shortage, the appropriate action was clear enough, and it could be taken by a single country. It was, under these circumstances, necessary for the U. S. to bridge the gap with gifts, grants, and loans. As long as the necessary credits were forthcoming, the balance-of-payments deficits of other countries *vis-a-vis* the U. S. were not too alarming, but the uncertainty concerning the willingness and ability of the U. S. to continue these arrangements plus the natural preference for trade to aid resulted in discriminatory action against dollar goods. When, however, the situation changed and the U. S. lost some \$4 billion in gold in two years, appropriate policies to diminish the gold outflow were not forthcoming. The restraint of the U. S. in refusing to enact restrictive legislation which would have had the effect of reducing the rate of gold outflow by reducing the total volume of world trade was remarkable. But the chief beneficiaries of the U. S. embarrassment, England and Western Europe,

hesitated to take steps to ease the situation. The reasons are not hard to find. After several years of inadequate international reserves, these countries had an understandable reluctance to kill the goose that was laying the golden eggs. Further, there was little appropriate action which could be taken by any individual country; what was needed was joint action by all countries of Western Europe. Under the gold exchange standard there is no automatic device to maintain international reserves comparable with those provided by the old style gold standard, nor are there any rules of the game which will prevent a protracted loss of gold by a deficit country.

The quota system currently employed by the IMF treats borrowing as "sales" to the Fund, and there is no relationship between changes in a country's reserve and its position at the Fund. Increasing a country's quota (its borrowing capacity) actually results in a fall in its reserves because part of the quota must be paid in gold, and the quota does not constitute an international reserve.

Supranational economic agencies have made remarkable progress since World War II, and it is not surprising to discover that in some respects they remain inadequate. Triffin's proposals for changes in the scope and function of the IMF deserve careful and prompt study by economists and politicians. A consideration of changes in the role of the Bank as well as the Fund would also seem to be in order, and a higher degree of correlation of the work of the two Bretton Woods institutions would appear to be increasingly necessary.

CLARK LEE ALLEN

Southern Illinois University

Copper Costs and Prices: 1870-1957. By Orris C. Herfindahl. Baltimore, Md.: Johns Hopkins Press, 1959. Pp. 260. \$6.00.

Dr. Herfindahl has provided us with an authoritative work on the copper industry. He points out at the beginning of his work that absolute physical exhaustion of valuable earth materials is of limited significance since long before such a condition is reached "difficulties will arise in the form of persistently increasing costs because new deposits are becoming harder to find or because the quality of the deposits found is deteriorating." As Erich W. Zimmermann and others, have pointed out, resource development is not so much a problem of "can it be done" as it is one of "is it worth doing."

Part I of the book is devoted largely to analysis of copper industry costs and how to measure them. This is the crucial part of the work. Two possible cost measures are mentioned briefly and then discarded: using physical quantities and ore grades is

deemed too limited in influencing costs; using inputs of materials and services of labor and capital used, valued at constant prices, is abandoned because of the difficulty of obtaining adequate data in a usable form. The method finally settled upon by Dr. Herfindahl is to use price as a means of measuring cost changes. At this point the major problem arises and is put in the form of a statement as follows: "If the force of competition is strong enough, price apart from short-run disturbances should reflect cost." Has competition in the copper industry been strong enough? Dr. Herfindahl says, "It is the writer's judgement that these varied types of evidence bearing on the intensity of competition strongly support the view that the force of competition was great enough to permit the drift of the price of copper over long periods to be taken as an indication of change in the cost of copper." The "evidence" referred to above consists of the following arguments of the author: First, the investment of copper firms has been in the form of a systematic response to economic incentive; second, shifting of sources of supply, from country to country, and within the United States, constitutes a serious obstacle to an organization of restriction of output; third, concentration of output in the copper industry has not increased significantly since the decade of the twenties; fourth, the persistence of price differentials between the United States and foreign countries cannot be said to be due to a lessening of competition.

Even if this "evidence" is accepted as indicating that competition is strong in the copper industry there is a serious omission in Dr. Herfindahl's approach. The copper industry, in terms of its structure, most closely resembles that of a homogeneous oligopoly and while it is true that competition in such an industry may be intense it is also true that this competition is of quite a special nature, especially in the area of prices and pricing policy. Since Dr. Herfindahl admits that his whole analysis rests on the validity of price as a measure of cost it seems unfortunate that he did not include a systematic analysis of the influence of the industry structure on this important point.

Using price data has one other serious drawback, as Dr. Herfindahl points out. Periods of unusual price behavior due to various causes must be eliminated from the picture. When copper supply and demand are seriously distorted by events such as World War I, the Great Depression, World War II, the Korean War, as well as those periods, however short, when collusion in pricing policy was at work in the copper industry, price data are obviously of limited usefulness. After eliminating all such unusual periods from the twentieth century there is not much left in the way of "normal"

periods of price activity. Dr. Herfindahl has tried to overcome this problem partly by using foreign price data where the disturbances were confined almost entirely to the U. S. market.

Most of Part II of the book is devoted to a discussion of periods of unusual price behavior of one type or another. Regarding the periods of collusion Dr. Herfindahl is of the opinion that while the industry structure was such as to lend itself to collusion the periodic discovery of new deposits and their development largely frustrated attempts at cooperative pricing arrangements.

Withal, this book provides the interested reader with a wealth of information in the copper industry not previously available in any convenient form. The data and analysis are both lucidly presented and statistical data is offered in support of Dr. Herfindahl's conclusions. Technological innovations in the copper industry are discussed only briefly as the author is interested in them only insofar as they had any significant effect on prices and costs. The most important of these developments, the shift from selective to mass mining techniques, is examined more thoroughly than others.

It is refreshing to note that Dr. Herfindahl's discussion of copper resources emphasizes the economic aspects rather than the purely physical aspects of the problem. Resource deterioration is a term which can mean all things to all men, and unless definite criteria for the meaning of the term can be agreed upon in advance a discussion of the matter is likely to be fruitless. Resource availability in the copper industry is much more than could be shown by a physical inventory of deposits and reserves even assuming that such an inventory could be taken. Increasing utilization of scrap copper and the increasing competition of other metals, notably aluminium, for uses formerly considered the exclusive domain of copper, have had a considerable impact on the long run supply and demand for copper, as are noted by the author.

Dr. Herfindahl concludes that the environment within which copper discovery and development take place is large and relatively stable; there is a close response of investment and production to changes in profit prospects; competition forces have been sufficiently strong in the industry to assure that prices accurately reflect cost changes except for periods of unusual disturbances (admittedly numerous); and the work, as a whole is a welcomed addition to the literature of resource development and availability.

GEORGE A. SPIVA

Gadjah Mada University, Indonesia

Gas Rate Fundamentals. By the Rate Committee of the American Gas Association. New York:

American Gas Association, 1960. Pp. xxii, 357. \$7.00.

The somewhat foreboding title of this book should not deter the economist interested in public utilities, natural resources, or business organization generally from delving into it and using it for reference or in the classroom. It is far more complete than the name implies. Indeed, the Rate Committee of the American Gas Association has given to practicing economists a comprehensive survey of gas industry economics, history, regulation, cost analysis and rate design.

This book is appropriate at this time for its publication coincides quite closely with the demise of the boom stage of the natural gas industry—a boom which did not fully develop until after World War II. Few industries have experienced as rapid growth as natural gas, and the result has been a revolution in the energy supplying industries. It breathed new life into the stagnant, if not dying, manufactured gas industry. Gas once more became a strong competitor in the cooking and waterheating fuel markets and entered vigorously into the rough and tumble competition as a fuel for space heating and industrial heat and power. With the advent of the natural gas industry there came a whole new set of problems to challenge accepted practices and thinking in public utility economics. These problems are currently being aired in testimony before regulatory commissions and, at times, in journal articles. But they are only beginning to seep down into books which discuss public utility economics. This book takes a long step forward in laying the groundwork for broader discussion of these problems.

Gas Rate Fundamentals is the first attempt to organize and present a clear, factual picture of the gas industry, its problems, and some of the attempts to solve these problems. Section I deals with the nature and history of the gas industry. Here is told the story of the transition from manufactured to natural gas. Also covered is the much discussed but little understood area of gas production economics. In Section II, which deals with utility regulation, and in Section I the Rate Committee sidesteps a detailed discussion of the controversial topic of Federal Power Commission regulation of natural gas producers. This new and critical area of Federal regulation needs careful attention by all those concerned with industrial organization and business regulation in this country. The reader gets a feeling of frustration in the "regulation" Section—a feeling somewhat akin to that experienced by the people struggling with this unsolved problem.

Section III delves into "cost of service" and presents a fairly cogent discussion of the mechanics of cost analysis in a "training manual"

style. (It should be emphasized that one use to which sections of such a book may be put is that of educating gas utility employees.) The economist is left dissatisfied to some extent with this section because it rarely goes beyond the level of rate mechanics. It fails to attack some of the basic controversies such as joint cost allocation in pipeline and producer regulation. Current industry procedures are not questioned as to their validity or fundamental assumptions.

Section IV discusses the complex subject of gas utility pricing and brings together the latest thinking on pricing for both distributing utilities and long-distance transmission lines. The discussion of pipeline rates is particularly worthwhile, since this is a subject which has been hammered out in post-War years. The economist may wish for a more detailed treatment of the "theory of discriminatory pricing" under monopoly conditions, but he is furnished with much food for thought in this and other such enticing theoretical areas.

Sections V and VI deal largely with the practical problems of setting rates and the internal operations of gas utilities. Much useful information can be gained by the classroom teacher on the inner workings of utilities and the statistical techniques used by them. Section VII provides a layman's handbook on how to prepare for and conduct a proceeding before a regulatory body. In public utility economics, where a legal footing is necessary to understand the economic implications, this discussion of administrative law and procedure is indeed of great benefit. Finally, the Rate Committee has worked hard in preparing a chapter by chapter bibliography which, while not all inclusive, will be welcomed by economists working in this field.

Thus, the A.G.A. has gone far beyond service to its industry and has provided a thoughtful, readable book from which economists can get information about and insight into an important industry not heretofore treated in a dispassionate fashion. If this book does not answer all the questions about the gas industry, it certainly should stimulate thinking about it.

WALLACE F. LOVEJOY

Southern Methodist University

Tin Cans and Tin Plate: A Study of Competition in Two Related Markets. By James W. McKie. Cambridge, Mass.: Harvard University Press, 1959. Pp. xii, 321. \$7.50.

Professor McKie's study, the fifth in the Harvard University Series on Competition in American Industry, assesses the market dynamics at work in a highly concentrated—and truncated—bilateral oligopoly, tin plate and tin cans. He begins by developing the theoretical constructions relevant

to the subsequent factual investigation, moves on to an analysis of market structures, pricing policies, and "peripheral" (McKie prefers this term to "non-price") competitive strategies, and ends with an appraisal of the workability of competition in the related markets in the light of both actual and possible anti-trust remedies. The result is a well organized, clearly written, and carefully reasoned piece of analysis that merits a place high on the list of best industry studies yet published.

Tin can prices are tied to the price of tin plate; plate costs account for slightly over 60 per cent of the price of cans. Throughout the 20th century, United States Steel has dominated the pricing of plate, and American Can the pricing of cans. American's bargaining power as a tin plate purchaser has held the price of plate below the level a highly concentrated steel industry might have charged a more competitively structured tin can industry. As a result, other tin can manufacturers, canners, and, ultimately, consumers have benefited from the interposition of American between the steel industry and tin can users. But the benefits are largely attributable to actual and potential competition in tin can manufacture. In the early days of the "Tin Can Trust," American, then in possession of over 90 per cent of the tin can business, apparently tried to exploit its market power through high can prices. This resulted in the rapid rise of Continental Can, the entry of more small can manufacturers, and the backward integration of large packers and general-line can users into can manufacturing; between 1901 and 1913 American's share fell from over 90 per cent to about 50 per cent of the market. Since 1916 can prices may not have been highly competitive, but they have tended, with American assuming the role of price leader, more toward the level effective competition would have set. Concurrently, competition in the form of innovations in cans and closing machinery and in better service to packers has grown more intense.

Twice the tin can industry has been prosecuted under the Sherman Act. In 1916 the Department of Justice sought greater competition through dissolution of American Can along the lines of the 1911 *Standard Oil* and *American Tobacco* decrees. Judge Rose, while acknowledging the monopoly power of American Can, denied dissolution because he was "frankly reluctant to destroy so finely adjusted an industrial machine as the record shows the defendant to be." In 1949 the Department of Justice sought a higher order of competition by proceeding directly against certain trade practices themselves. This time it won. The resulting decree significantly changed the business policies of American and Continental with respect to can and closing machinery contracts. Both companies' policies

had earlier been altered by the enactment of the Robinson Patman Act.

McKie's analysis of all this leads him to conclude that the tin can industry's performance merits a rating of workably competitive. Here he is less than sanguine. He concedes that the structure of the industry is probably not as competitive as it would have been had Judge Rose decreed dissolution in 1916. He also acknowledges the opposite conclusion reached by others who have recently reviewed the industry, notably Stocking and Watkins, Hession and Strauss. The principal source of difference lies in the different market horizons. Others have focused their attention on the structure and performance of the tin can industry and found the structure unworkably competitive. McKie, in his framework of bilateral oligopoly, finds high concentration in can manufacture not especially repugnant to a policy of maintaining competition so long as there exists high concentration in the production of tin plate. Presumably in the (unlikely) event that U. S. Steel should be dissolved, the essential difference between McKie and the others would dissolve also.

In the language of Judge Rose, I am reluctant to drag in even minor criticisms of so finely executed a piece of industry analysis. McKie's conclusion would have been more convincing had he stated explicitly those specific criteria by which he measures the workability of competition. And a more complete examination of substitute competition would have been especially illuminating in view of the pending Owens Illinois and Continental-Hazel Atlas merger litigations. But in any industry study, some stones must remain unturned. McKie left far fewer unturned than most, and those he turned he examined with unusually good vision and judgement.

JESSE W. MARKHAM

Princeton University

Postwar Market for State and Local Government Securities. By Roland I. Robinson. Princeton: Princeton University Press, 1960. Pp. xxiv, 227. \$5.00.

This book represents the first published results of a series of studies sponsored by the National Bureau of Economic Research and dealing with postwar capital market developments in the United States. Other projected publications in the series will cover the markets for Treasury securities, corporate securities, and residential mortgages, respectively. If these later volumes measure up to the high standards set by Roland I. Robinson, author of the present study, the contribution of the entire series will be notable indeed.

Following a plan of analysis which will be em-

played in the other studies as well, Dr. Robinson deals with four interrelated aspects of the market for state and local bonds: (1) the supply of new issues; (2) the demand for such issues; (3) the marketing institutions and procedures through which supply and demand are equated; and (4) the secondary market for state and local securities. The effects of federal tax exemption on municipal bond yields, on the interest costs of state and local governments, and on the revenue yield of the federal income tax are treated at length in a special chapter. Another special chapter is devoted to the market for tax-exempt revenue bonds.

Robinson's monograph reflects the broad knowledge of monetary and banking matters which he has gained in the course of his long association with the Federal Reserve Board. For those who seek information on state and local securities, he has performed a three-fold service. First, he has assembled and evaluated practically all of the available and pertinent statistics on this subject for the decade from 1946 to 1956. Second, he has competently analyzed these statistics and has come up with significant findings. Last, but not least, he has given us a realistic description of the institutional structure of the market for state and local bonds along with a generalized account of the roles and motivations of those who participate in its activities.

Despite its dated title, it is safe to predict that *Postwar Market for State and Local Government Securities* will be used as a standard reference work for a considerable time to come.

CLARENCE HEER

University of North Carolina

Income Tax Exemptions. By Michael E. Levy. Amsterdam: North-Holland Publishing Company, 1960. Pp. xii, 148. \$4.00.

This study is a rigorous analytical analysis of the impact of personal income tax exemption upon the average tax rate, the degree of progressivity in the tax structure and incentives to work. The analysis is couched in mathematical terms and is illustrated by extensive charts and tables.

Beginning with a consideration of the various types of income tax exemptions, Mr. Levy then appraises critically the conditions or criteria developed by Professor A. C. Pigou. The author then rigorously develops his own list of tax criteria. These are expressed in mathematical terms and are illustrated with charts and graphs.

Undoubtedly, the most interesting part of this study is the section devoted to work incentives. With recognition of the absence of adequate empirical data to formulate a basic theory of work incentives, Mr. Levy proceeds to develop an in-

genious analysis of the problem. His analysis is based upon common sense assumptions and while it does not always yield determinate results, it does suggest the probable influences of changes in the personal exemption and the rate structure upon the incentives of different income groups.

This volume is written for the specialist in the areas of economic theory and public finance. In addition to the mathematical analysis presented in the body of the book, a special mathematical appendix provides proofs for important material in the text.

JOE S. FLOYD, JR.

University of North Carolina

Mergers and the Clayton Act. By David Dale Martin. Berkeley and Los Angeles, Calif.: University of California Press, 1959. Pp. 351. \$6.00.

Professor Martin's most interesting and informative study of the enactment and enforcement of Section 7 of the Clayton Act, both before and after the 1950 amendment thereto, deserves the thoughtful consideration of all those concerned with the attempt of the Congress to curb by legislation the almost irrepressible trend toward concentration in American industry. This monograph will appeal, also, to anyone interested in a comprehensive and detailed case study of the formulation and execution of public policy.

The thesis of Professor Martin, stated at the outset (pp. 1-2) and repeated not infrequently thereafter in one form or the other, is that "...the amendment of Section 7 in 1950 was a major change in the substantive provisions of the antitrust laws of the United States and not a mere plugging of a loophole; that merger by means of asset acquisition was not a new stratagem devised to avoid the prohibitions of Section 7 after 1914; that the original Section 7 was part of a legislative program designed to limit the freedom of large corporations to engage in aggressive business practices rather than a change in the Sherman Act policy with respect to corporate mergers." It does not detract from the value of the study to observe that many students of the merger problem may require more proof than the author offers to be convinced of the validity of this thesis. Limiting the source material, for the most part, to FTC decisions, reports, and files, and to appellate court opinions, tends to restrict the value of the study.

Responsibility for the failure of Section 7 of the Clayton Act to effectively arrest the trend toward concentration in American industry is not easy to affix. It is by no means certain that members of Congress most instrumental in the enactment of the legislation, either in 1914 or in 1950, were fully conversant with the economic and legal issues involved, or that an appreciable number of the legis-

lators were sincerely interested in checking all manifestations of economic concentration. It is generally accepted that politics has always played a significant role in the enactment and enforcement of statutes, and that antitrust legislation is not an exception.

The Federal Trade Commission itself is not without some blame. The agency "...failed to develop a workable policy with which to apply the general criterion of illegality of the statute to specific cases of stock acquisition and, therefore, the responsibility for the emasculation of the section rests as much with the commission as with the courts" (p. 2). Some members of the commission—notably William E. Humphrey—were not in sympathy with the intent of the legislation, and they were inclined to pursue a course of action calculated to make the work of the commission as ineffective as possible. Furthermore, the commission appears to have relied rather heavily on the advice of the chief counsel; many of the occupants of this important post were reluctant to advise aggressive enforcement action.

Partisans of the Federal Trade Commission are inclined to blame the courts, along with the Congress, the Department of Justice, and others, for the failure of antitrust legislation to accomplish the purpose for which it was intended. Unlike some of the students of the problem, Professor Martin contends that the commission and the courts share "the responsibility for the emasculation of the section." To his way of thinking, many decisions of the Supreme Court—especially, *International Shoe Company* and *Arrow-Hart & Hegeman Company*—made enforcement of Section 7, prior to the 1950 amendment, very difficult. On the other hand, the Supreme Court is commended for its decision in the *Du Pont-General Motors* case—a Section 7 matter prosecuted by the Department of Justice and not by the Federal Trade Commission. One of the basic problems in the enactment and enforcement of antitrust legislation, not treated adequately by Professor Martin, is the inability of the economist and the lawyer to communicate with each other. The economist does not understand the lawyer, and the lawyer does not understand the economist. When the two attempt to collaborate on antitrust problems, even though each is acting in good faith, the results are not always in the public interest.

CLYDE C. CARTER

University of North Carolina

Restricted Stock Options For Management. By Charles F. Poston. Chapel Hill, N.C.: School

of Business Administration, University of North Carolina, 1960. Pp. xvi, 83. \$1.50.

This is a doctoral dissertation analyzing the restricted stock option, the use of which was facilitated by Congressional action in 1950. The analysis is approached, quite properly, from the standpoint of the problem of providing adequate compensation for corporate executives. Brief, but ample attention is given to other means of achieving this end. Poston believes that the restricted stock option meets this problem more satisfactorily than earlier-used methods.

The book is largely descriptive. The use of the device in 100 companies is first presented in rather broad strokes and then its use in 16 of those companies is examined in somewhat more detail. All of Poston's conclusions are favorable. From the corporation's point of view, "All the evidence seems to bear out the effectiveness of the restricted stock option... as an adequate means of providing incentive compensation" (p. 58). From the point of view of the executive the arrangement "has been an effective device in providing incentive" and, "less notably, in assisting him to acquire proprietorship" (p. 74). The executive does, however, assume some risks. From the stockholders' point of view, of the companies examined, there is almost no justification in objecting to the use of restricted stock options. The stockholder has little basis for fear of losing control or of having his earnings per share diluted (p. 80).

If all concerned gain, then we have a very unusual if not a wonderful device. The corporation pays out less than it would if it were providing incentive with salary and therefore the stockholders have less taken from them. Yet the executive is able to retain more than if his incentive were all salary. The gimmick is, of course, the provision in the income-tax law which provides for this means of compensation and subjects the income, when realized, only to a tax on capital gains. Looked at in this way, the restricted stock option gives rise to an additional income-tax loophole and thus, presumably, results in additional tax burden to those of us—no doubt, the vast majority of taxpayers—who do not have restricted stock options, or who are not the beneficiaries of some other equally favorable provision of the tax law. This social implication of the restricted stock option was, no doubt, beyond the scope of Poston's study. Its omission, to this reviewer at least, leaves the study with a rather serious gap.

JOHN B. McFERRIN

University of Florida

NOTES

DEATHS

Howard Davis, a member of the faculty of the School of Business of Richmond Professional Institute since 1938, head of its Economics Department, and a member of the State Milk Commission of Virginia, died on the 25th of June, 1960.

Brantson Beeson Holder, who retired as associate professor of economics at Washington and Lee University in 1959 after serving on the faculty there since 1941, died on July 16, 1960.

APPOINTMENTS, PROMOTIONS AND RESIGNATIONS

Leon A. Agranat, financial consultant, has been appointed associate professor of finance at American University.

Joseph Airov, associate professor of economics at the School of Business Administration, Emory University, has returned from a twelve month's leave of absence during which he was a participant in the Ford Foundation sponsored basic mathematics program at Harvard University.

Robert D. Amason, formerly instructor in business administration at the University of Arkansas, has been appointed assistant professor of building products marketing at Texas A. and M. College.

Arvid A. Anderson, formerly a member of the Department of Marketing at the University of Texas, has been appointed to the faculty of Arlington State College (Texas).

Steven C. Andrews, of the Department of Business Administration at Virginia Polytechnic Institute, participated in the Economics in Action program at Case Institute during the summer of 1960.

Raymond F. Barker, formerly instructor in marketing at the University of Texas, has been appointed to the faculty of Arlington State College (Texas).

Arnold L. Barrett, associate professor of economics at the University of Alabama, attended the Fifth Annual Political Economy Conference at the University of North Carolina, August 23 to September 1, 1960.

Basil B. Basset, who has been at Southwest Missouri State College for the past thirty years, retired from his position as professor of economics at the end of the summer, 1960.

J. Leslie Bayless has resigned his position as associate professor of marketing and management at Louisiana Polytechnic Institute.

Rue Beale has joined the staff of the Department of Economics, Murray State College.

Algernon S. Belcher, head of the Department of Social Sciences, South Carolina State College, has been promoted to dean of the School of Arts and Sciences.

A. W. Belden, formerly with the United States Army, has been appointed instructor of accounting at the University of Miami.

Charles Bell has been appointed instructor of management, College of Business Administration, University of Arkansas.

Lewis Bell, formerly director of purchases for the Commonwealth of Kentucky, has been appointed associate professor of economics at the University of Mississippi.

William R. Bennett, professor of marketing at the University of Alabama, attended the Summer Case Seminar Program sponsored by the Ford Foundation at Harvard University, June 19 to August 12, 1960.

George Berry has been appointed assistant professor of finance at Texas Technological College.

A. B. Biscoe, Jr., formerly with Standard Oil of New Jersey, has been appointed instructor of finance at the University of Florida.

Edwin Bishop has been promoted to assistant professor of economics at Georgetown University.

George W. Bishop, University of Tennessee, has been promoted to associate professor of finance.

J. Homer Blackstone, agricultural economist at Auburn University, is currently serving as an agricultural economics consultant with the U. S. Study Commission, Southeast River Basins, in Atlanta, Georgia.

Rudolph C. Blitz, Vanderbilt University, has been promoted to associate professor of economics.

Herman Block, professor of economics at Howard University, has resigned to accept a similar position on the faculty of the Industrial and Labor Relations School at Cornell University.

Arthur I. Bloomfield, of the University of Pennsylvania, has been appointed visiting professor in the Department of Political Economy at the Johns Hopkins University.

James R. Bobo has been appointed instructor in economics at Louisiana State University.

Mildred E. Boles has been appointed to the economics faculty at Southern University (Louisiana).

Julian Bolton has been appointed instructor of industrial management at the Georgia Institute of Technology.

Joseph Bonin, of the Department of Economics and Business Administration at Auburn University, attended the Alabama-Mississippi Urban Research Conference which was held at Oxford, Mississippi, October 4 and 5. This conference was sponsored by the Universities of Alabama, Mississippi, and North Carolina.

Gladys Boone retired as professor of economics and chairman of the Department of Economics at Sweet Briar College at the end of the 1959-60 academic year. She continues to teach the modern history course that is the introductory course to all social studies at Sweet Briar.

Mary Bowdoin has been promoted to editor of the Bureau of Business and Economic Research at Georgia State College of Business Administration.

P. F. Boyer, professor of business statistics and director of the Division of Research at Louisiana State University, has been appointed acting head of the Department of Finance.

Billy James Brabham, formerly an attorney in San Antonio, has been appointed to the faculty of the School of Business Administration at North Texas State College.

Robert C. Brannon, a graduate of Murray State College, has been appointed instructor in business administration at David Lipscomb College.

C. E. Brewer is serving as acting chairman of the Department of Economics at Queens College during the academic year 1960-61.

Merwyn G. Bridenstine, associate director of the Bureau of Business and Economic Research, University of Arkansas, attended a Ford Foundation Seminar for directors of university bureaus of economic research at the University of Colorado last summer.

Henry W. Briefs, associate professor of economics at Georgetown University, has returned from a leave of absence spent with the Council of Economic Advisors to the President.

Luther A. Brock is on leave from the University of Southwestern Louisiana to study at Louisiana State University.

Dwight S. Brothers has been promoted to associate professor of economics at Rice Institute.

Allen J. Brown, who recently received an M.S. degree from Auburn University, has been appointed extension poultry marketing specialist at Auburn University.

Robert K. Brown has been promoted to professor of insurance, real estate and law at Georgia State College of Business Administration.

William R. Bryan, formerly a graduate student at the University of Wisconsin, joined the staff of the Federal Reserve Bank of St. Louis as economist in September, 1960.

Donald Eugene Bryant has been appointed as-

sistant professor of economics at the University of Southwestern Louisiana.

Roger L. Burford has been appointed assistant professor of economics at the Georgia State College of Business Administration.

Benjamin C. Butcher, assistant professor of marketing, University of Tennessee, is on leave of absence to pursue doctoral studies at the University of Illinois.

Eugene T. Byrne, Jr. has been appointed instructor in management at Tulane University.

Edwin L. Caldwell, professor of economics at Baylor University, is on leave until September, 1961, at the Federal Reserve Bank of New York, where he is directing a research study in regional industrial development.

Reynold E. Carlson, Vanderbilt University, spent several weeks in March and April, 1960, as consultant to the Ford Foundation in Brazil where he studied the status of economic research for the Foundation.

Robert W. Carney, formerly associate professor of Business administration at Emory University, is now associate professor of industrial management at the Georgia Institute of Technology.

Corinne T. Carpenter has been appointed assistant professor of business education at Grambling College. She was formerly at Alcorn College.

Adger Carroll, research assistant, Agricultural Economics Department, Clemson College, is now a teaching assistant at North Carolina State College where he is working toward the Ph.D. degree.

Edna Carothers is teaching secretarial science at the College of the Ozarks.

Ira Castles has been promoted to professor of economics at Delta State College.

William P. Neal, a practicing C. P. A., has been appointed part-time instructor in business administration at Delta State College.

John Champion has been promoted to associate professor of management at Georgia State College of Business Administration.

Yu-min Chou, formerly instructor in economics at the University of Wisconsin, has been appointed assistant professor of economics at Baylor University.

John W. Cook, assistant professor of accounting at Georgia State College of Business Administration, is on a one-year leave of absence.

Hibbert D. Corey has been appointed acting chairman of the Department of Economics at the College of William and Mary.

James C. Cotham has been appointed assistant professor of marketing at the University of Tennessee.

John R. Couture joined the faculty of Rockhurst College as instructor in economics at the beginning of the 1960-61 academic year.

Shirley Ann Cox has been appointed instructor in business education at Arkansas State Teachers College.

John Gaylord Cummins has been appointed assistant professor of economics at Tulane University.

Edward W. Condiff, chairman of the Department of Marketing at the University of Texas, is on leave for the 1960-61 academic year and is teaching in the European Productivity Agency of the Organization for European Economic Cooperation, Fontainebleau, France.

William K. Cunningham has been appointed lecturer in marketing at the University of Texas.

Clarence H. Danhof, professor of economics at Tulane University, has returned from a year of research.

M. Gordon Daniels has returned as assistant professor of economics at Texas A. and M. College after a leave of one year at Central University, Quito, Ecuador.

Robert C. Davenport has been appointed lecturer in the Department of Economics at the University of Maryland.

Earl Davis has been appointed temporary instructor in business law at the University of Alabama, effective September 1960.

James Davis has been appointed temporary instructor in marketing at the University of Alabama, effective September 1960.

John S. deBeers, associate professor of economics at the University of Maryland, resigned to join the staff of the Inter-American Development Bank.

H. Paul Dellinger, assistant professor of management at Baylor University, is on leave at the University of Alabama, where he is continuing his graduate studies.

Lev E. Dobriansky has been promoted to professor of economics at Georgetown University.

Norton T. Dodge, assistant professor of economics at the University of Maryland, has been appointed correspondent of the *Southern Economic Journal* for Maryland.

George A. T. Donely has been appointed instructor in finance at Louisiana State University in New Orleans.

Norman X. Dressel has been promoted to professor of accounting at Georgia State College of Business Administration.

L. Aubrey Drewry, of Queens College, is serving as Fulbright lecturer in economic statistics at the University of Ceylon, Peradeniya, Ceylon, during the academic year of 1960-61.

J. W. Dunlap has been appointed instructor of economics, College of Business Administration, University of Arkansas.

Nash Dunshaw has been appointed instructor of

industrial management at the Georgia Institute of Technology.

Howard S. Dye, professor of economics at the University of Tennessee, has completed a lectureship at University College, Dublin, Ireland, under the Fulbright exchange program.

William C. Edell, assistant professor in the Industrial Management Department, Clemson College, participated in the Ford Foundation Economics Research Seminars at Vanderbilt University last summer and continues the fellowship throughout the 1960-61 academic year.

E. T. Eggers has been promoted to professor of management at the Georgia State College of Business Administration.

Henry J. Engler, Jr., dean of the College of Business Administration at Loyola University, attended the Political Economy Conference at the University of North Carolina from August 23 through September 1, 1960.

Thomas E. Ennis, Jr. has returned to his position as assistant professor of accounting at Washington and Lee University after spending two years on leave in study for the doctorate in economics at the University of Michigan.

Norbert Enrick has been appointed assistant professor in the Graduate School of Business Administration of the University of Virginia.

David I. Fand has been promoted to professor of economics at Southern Methodist University.

Charles E. Ferguson has been promoted to associate professor of economics at Duke University. He is on leave for the fall semester, 1960, and holds a grant from the Inter-University Committee for Economic Research on the South.

Russell Ferrington, assistant professor of accounting at Louisiana Polytechnic Institute, has returned from a two-year leave of absence to study at Michigan State University.

Peter A. Firmin, associate professor of accounting at Tulane University, has returned from a year of study at the Institute of Basic Mathematics for Application to Business, sponsored by the Ford Foundation.

Paul J. FitzPatrick, professor and head of the Department of Economics at Catholic University of America from 1943 to 1959, retired on August 31, 1960.

Kenneth U. Flood has returned to Georgia State College of Business Administration from a one-year leave of absence at Harvard University to work on his doctorate.

A. C. Flora, Jr., associate professor of economics, University of South Carolina, has been made editor of publications of the University's Bureau of Business and Economic Research.

James M. Folsom has been promoted to assistant professor of economics in the Department of Eco-

nomics and Business Administration, Duke University.

Francisco Forte, of the University of Urbino, Italy, is acting associate professor of economics at the University of Virginia for the first semester of the 1960-61 academic year.

Wesley O. Fortner has been appointed assistant professor of accounting at Georgia State College of Business Administration.

Irving A. Fosberg has been appointed lecturer in business administration at Loyola University.

Elton Franklin, formerly at the Huntsville Resident Center of the University of Alabama, has been appointed professor of economics and chairman, Department of Commerce, at Louisiana College.

Harry L. Franklin was appointed visiting lecturer in economics at Georgetown University.

Joseph L. Frye has been promoted to professor of transportation at the University of Tennessee.

Grady P. Fuller has been appointed professor of economics at Martin College (Tenn.).

Francis W. Gathof, Jr. has been promoted to assistant professor of economics at American University.

Charles J. Gendusa has been appointed assistant professor of accounting at Loyola University.

Wayne F. Gibbs has retired as head of the Department of Business Administration and professor of accountancy at the College of William and Mary, because of ill health.

Vincent J. Gilday has been appointed instructor of accounting at Villa Madonna College.

William P. Glade, assistant professor of economics at the University of Maryland, has resigned to accept a similar position in the School of Commerce at the University of Wisconsin.

Frederick J. Glover has been appointed Fulbright visiting associate professor of economics at the College of William and Mary.

George T. Gott has been appointed professor of economics at Southern Missionary College.

Paul V. Grambech has resigned his position as dean of the School of Business Administration at Tulane University to accept the deanship of the School of Business Administration at the University of Minnesota.

B. B. Graves has been appointed instructor in management and marketing at Louisiana State University.

Otha L. Gray has returned to Georgia State College of Business Administration from a one-year leave at the University of Alabama to work on his doctorate.

Henry Grayson, associate professor of economics at the University of Maryland, is serving as professor and head of the Department of Economics

at the University of Khartum in the Sudan while on leave for the 1960-61 academic year.

Harry A. Green, instructor in economics at Middle Tennessee State College, has been awarded a National Defense Scholarship at the University of Colorado.

Leroy J. Grossman joined the staff of the Federal Reserve Bank of St. Louis as economist in February, 1960, after having served as intelligence officer in the U. S. Army.

Jack D. Guenther, formerly of Vanderbilt University, has joined the staff of the International Monetary Fund, Washington, D. C.

John G. Gurley has been promoted to professor of economics at the University of Maryland.

Harold Guthrie, formerly assistant professor of economics, Yale University, is now associate professor in the same subject, University of Kentucky.

Percy L. Guyton, professor of economics at Memphis State University, has been granted a one year's leave of absence to serve as staff economist with the Joint Council on Economic Education.

Daniel Hamburg has been promoted to professor of economics at the University of Maryland.

William Rogers Hammond has been promoted to dean of Graduate Studies at Georgia State College of Business Administration.

P. B. Han is assistant professor of industrial management at the Georgia Institute of Technology.

Donald Harris is teaching accounting at Southern State College.

Chester W. Hartwig, of the Department of Economics and Business Administration at Auburn University, attended the Alabama-Mississippi Urban Research Conference which was held at Oxford, Mississippi, October 4 and 5. This conference was sponsored by the Universities of Alabama, Mississippi, and North Carolina.

Joseph A. Hasson, formerly of Midwest Research Institute (Kansas City), has joined the faculty of the Junior College of Kansas City.

Friedrich A. Hayek, of the University of Chicago, will serve as Distinguished Visiting Scholar at the Thomas Jefferson Center for Studies in Political Economy, University of Virginia, for the second semester of the 1960-61 academic year.

R. R. Haynes has joined the Economics Department at Belhaven College.

Emery J. Hebert, formerly lecturer in management at the University of Texas, was appointed assistant professor of management at Arizona State University, effective September 1, 1960.

Benjamin Higgins, chairman of the Department of Economics at the University of Texas, served as expert financial adviser to the government of Lebanon during the summer of 1960.

Forest G. Hill, of the University of Buffalo, has been appointed professor of economics at the University of Texas.

James G. Hilton has been appointed assistant professor of economics at the University of South Carolina.

Werner Z. Hirsch will be on half-time leave of absence from Washington University beginning the spring semester, 1961, to serve as co-principal investigator in a three-year study of spillover tax and benefit effects in public education.

John L. Hix has joined the faculty of the University of Southwestern Louisiana as an assistant professor of business communication.

R. J. M. Hobbs, professor of business law since 1929 and former dean of the School of Business Administration, University of North Carolina, retired in June 1960.

Louise Hollenbeck, assistant professor of business education at the University of Miami, has retired effective June 1960.

W. Slater Hollis, an attorney from East Memphis, Ark., is a new assistant professor of business administration at The Citadel.

William D. Holloway has been appointed instructor in accounting at the University of Tennessee.

Paul T. Homan has been appointed director of Graduate Studies for the Department of Economics at Southern Methodist University.

Hiram Honea has resigned as assistant professor of economics, finance and statistics at Georgia State College of Business Administration.

John J. Hooker was appointed head of the Department of Economics at Catholic University in the fall of 1959.

Calvin B. Hoover, professor of economics at Duke University, is on leave for the year 1960-61. He holds a Ford Faculty Fellowship.

Charles Hultman, who recently completed work for the doctorate in economics at State University of Iowa, is now assistant professor of economics, University of Kentucky.

Ray C. Hunt is on leave from the McIntire School of Commerce of the University of Virginia in order to complete his doctoral work at New York University.

Robert L. Hurst, professor of economics at South Carolina State College, has been promoted to director of Graduate Extension.

Winfield Hutton, formerly with the Federal Reserve Bank of Atlanta, has been appointed assistant professor of industrial management at the Georgia Institute of Technology.

Hampden L. Ipser, Jr. has been appointed lecturer in business administration at Loyola University.

Mattie L. Irving has been granted a one-year

leave of absence from Southern University (Louisiana) to study at Columbia University.

Virgil A. James is on leave from the Department of Management, University of Texas, and is spending the 1960-61 academic year with the Socony-Mobile Oil Company in New York City.

George Jaszi, of the U. S. Department of Commerce, has been appointed lecturer in the Department of Political Economy at The Johns Hopkins University for the February 1961 term.

Harry L. Johnston, associate professor of finance at the University of Alabama, attended the Fifth Annual Political Economy Conference at the University of North Carolina, August 23 to September 1, 1960.

Ole S. Johnson, formerly of Michigan State University, has been appointed professor of Marketing and director of Marketing Program at American University.

John W. Johnston has been appointed lecturer in marketing at the University of Texas.

Vincent H. Jones, assistant professor of accounting at Southern University (Louisiana), was a consultant at the International Business Machines Workshop-Seminar, which was held August 8-18, 1960, at Endicott, New York.

Louis H. Jordan, formerly associate professor of accounting at Tulane University, has accepted an appointment at Columbia University.

John E. Kane, professor of business administration, College of Business Administration, University of Arkansas, participated in the University of California Ford Foundation Seminar in New Developments in Business Administration held at Berkeley last summer.

Algin B. King, professor of business administration, has been appointed acting head of the Department of Business Administration in the College of William and Mary.

Martin L. King, formerly of the University of Kentucky, has been appointed associate professor of marketing and business research at American University.

Robert L. King returned to the School of Business Administration, University of South Carolina, in September 1960, after a year's leave of absence at Michigan State University, where he received the Ph.D. degree in August.

Jimmy G. Kinnison is now at Southeastern Louisiana Institute teaching accounting and business communications.

Robert E. L. Knight has been appointed assistant professor of economics at the University of Maryland.

Jack L. Knusel, formerly instructor at the University of Wisconsin, Milwaukee, became assistant professor at Northwest Missouri State College in September 1960.

Simons Kuznets of The Johns Hopkins University has resigned to accept an appointment as professor of economics at Harvard University.

John M. Lain has been promoted to professor of journalism at the University of Tennessee.

William Joseph Lanham, agricultural economist, USDA, stationed at Clemson College, has been transferred to North Carolina State where he is working toward the Ph.D. degree.

Catherine Lemna has been appointed assistant professor of business education at the University of Miami.

R. V. Lesikar, professor of management and marketing at Louisiana State University, has been appointed acting head of the Department and has also been appointed as Coordinator of Graduate Studies in Business Administration.

Irwin M. Levine has been appointed instructor in business administration at the School of Business Administration, Emory University.

Harry Lipeon, professor of marketing at the University of Alabama, attended the Faculty Seminar in New Developments in Business sponsored by the Ford Foundation at the University of California (Berkeley), August 1-26, 1960.

Orlando Lobo, instructor in economics at Georgetown University, has resigned to join the staff of the International Monetary Fund.

Millar F. Long, who recently completed his doctorate at the University of Chicago, has been appointed assistant professor of economics at Vanderbilt University.

Clarke B. Loudon has been promoted to professor of business administration at Georgetown University. He has been granted a one-year leave of absence to serve as visiting professor of business administration at Al-Hikma University of Bagdad, Iraq.

Keith E. Lucas, formerly of Eastern Michigan University, has been appointed head of the Department of Business and Economics, Arkansas State College.

H. N. Lunn, assistant professor of accounting at the University of Tennessee, is on leave of absence pursuing doctoral studies at the University of Illinois.

James W. McKie, Vanderbilt University, has been promoted to associate professor of economics.

Erskine W. McKinley, formerly assistant director for Social Sciences for the Rockefeller Foundation, has accepted a position as associate professor of economics at Tulane University.

Benny R. McManus, formerly employed by the Alabama Agricultural Extension Service, has accepted an appointment as an assistant in agricultural economics at Auburn University.

Melvin E. McMichael, formerly lecturer in management at the University of Texas, has joined

the Dallas consulting firm of Wilson, Ferguson and Winnich.

James U. McNeal has been appointed lecturer in marketing at the University of Texas.

James McQuiston, formerly graduate assistant at the University of Virginia, has been appointed assistant professor of economics at Mississippi Southern College.

George J. Malanos, chairman of the Department of Economics at Georgia State College of Business Administration, has been granted a one-year leave of absence.

John W. Manning has been appointed professor of business research, School of Business, University of Louisville.

Robin Marris of Kings College, Cambridge University, is visiting professor of economics at the University of Texas during the fall semester, 1960.

Edwin C. Marsh, of the Department of Business Administration of Virginia Polytechnic Institute, attended the Forum on Finance in Wall Street during the summer of 1960.

Mary Ann Martin has been appointed instructor in business administration, Morehead State College (Ky.).

Julia I. Martinez, formerly professor of statistics at the University of Nuevo Leon, Mexico, has been appointed assistant professor of business statistics at the University of Texas.

Thomas R. Masterson, formerly at DePaul University, is now associate professor of business administration at the School of Business Administration, Emory University.

John R. Matthews, Jr., formerly of the University of Virginia, has been appointed assistant professor in the School of Business of Richmond Professional Institute.

William A. Mauer, formerly a graduate student at Duke University, has been appointed assistant professor of economics at Tulane University, effective September 1960.

W. David Maxwell has been promoted to associate professor of economics and has been appointed chairman of the Department of Economics at Tulane University.

Everard W. Meade, Jr., formerly part-time lecturer in the Graduate School of Business of the University of Virginia, is now a full-time member of the faculty.

Mildred R. Mell has retired from her position as professor of economics and sociology at Agnes Scott College.

Paul Mers, who was assistant professor at Canisius College in 1959-60, has become associate professor of economics at Southwest Missouri State College.

Michael H. Mescon has been appointed associate

professor of management at Georgia State College of Business Administration.

Harvey G. Meyers has retired as professor and head, Department of Accounting, at the University of Tennessee.

Peter S. Miller, formerly of the U. S. Navy and Fresno State College, California, has been appointed assistant professor in the School of Business of Richmond Professional Institute.

Edwin S. Mills was promoted to associate professor of political economy at The Johns Hopkins University, effective July 1, 1960. He has received a Ford Faculty Research Fellowship and will be on leave from February 1, 1961 to January 30, 1962.

Harry Mills has resigned as instructor in business services at North Texas State College. He will continue his graduate studies at the University of Oklahoma.

Robert A. Minick, who has been working on the doctorate in economics at the University of Texas, has been appointed assistant professor of social science at Southeast Missouri State College.

Joe Mitch, previously principal at Downing, Missouri, High School, has become instructor in business and economics at Moberly Junior College.

Sid Mittre, a doctoral candidate at the University of Florida, has been appointed assistant professor of economics at Stetson University for the 1960-61 academic year.

Richard W. Molten, formerly of the University of North Carolina, is now assistant professor of economics, University of South Carolina.

John R. Moore, the University of Tennessee, has been promoted to professor of economics. He has just returned from a year's leave of absence, during which he attended the Institute of Basic Mathematics for Application to Business conducted at Harvard University.

Daniel C. Morgan, assistant professor of economics at the University of Tennessee, is on leave of absence pursuing doctoral studies at the University of Wisconsin.

James A. Morris, professor of economics at the University of South Carolina, became director of the Bureau of Business and Economic Research at the University, July 1960.

Karl Morrison, professor of marketing at the University of Mississippi, is engaged in full-time research on a project for the Small Business Administration.

Norman W. Mosher has been appointed instructor in economics at the University of Maryland.

James E. Moss has left the University of Missouri, where he was a graduate student, to become instructor of economics at Christian College (Mo.).

Donald F. Mulvihill, professor of marketing at

the University of Alabama, was a member of the Top Management Impact Team for the International Cooperation Administration which held seminars with business and government leaders in Nicaragua and Honduras, August 28 to September 24, 1960.

Francis J. Murphy joined the faculty of Rockhurst College as instructor in economics at the beginning of the 1960-61 academic year.

Richard E. Neel has been appointed assistant professor of economics at the College of William and Mary.

Cora Louise Nelson has been appointed part-time instructor in economics in the School of Business Administration, University of North Carolina, effective September 1960.

William H. Nicholls, chairman of the Department of Economics and Business Administration, Vanderbilt University, spent the summer of 1960 as consultant to the Ford Foundation in Brazil where he surveyed the faculties of economics and agricultural economics.

Miklos S. Nicholson, of Phillips University, directed one of three conferences last summer on Economic Education at that institution, sponsored by the Oklahoma Council on Economic Education.

Harold L. Nix recently resigned as assistant rural sociologist at Auburn University to accept a similar position at Georgia State College of Business Administration.

Joe N. Norman, associate professor of business at Grambling College, has resigned to accept a position at North Carolina College.

Hugh S. Norton, the University of Tennessee, has been promoted to professor of transportation.

E. W. Ogram has been promoted to associate professor of economics, finance and statistics at Georgia State College of Business Administration.

Alfred L. Parker has been appointed instructor of economics at Oklahoma State University.

William N. Parker, of the University of North Carolina, was elected co-editor of the *Journal of Economic History* at the meeting of the Economic History Association at Philadelphia, September 9 and 10, 1960.

James Parthemos has resigned his position at Tulane University to accept a research position with the Federal Reserve Bank in Richmond.

Albert W. Patrick, of the University of Tennessee, is serving as visiting professor in the McIntire School of Commerce of the University of Virginia.

John F. Pearce, assistant professor of economics, Clemson College, participated in both the Economics-in-Action program at Case Institute of Technology and the General Electric Foundation Seminar at the Graduate School of Business Administration, University of Chicago last summer.

David R. Pender has joined the faculty of the University of South Carolina as assistant professor of economics and research economist in the School of Business Administration.

H. G. Penny, Col., U. S. Army (Retired), is serving as assistant professor of economics at Missouri Valley College.

Clarence E. Philbrook, professor of economics at the University of North Carolina, organized and directed the fifth annual Political Economy Conference, which was held in Chapel Hill last summer during August 23 to September 1. He presented a paper on monetary policy at the Mont Pelerin Society meetings that were held in Kassel, Germany, September 5-10, 1960.

Richard W. Poole has been appointed assistant professor of economics at Oklahoma State University.

Elizabeth R. Post has been promoted to lecturer in economics at Vanderbilt University.

Cedric Jack Pounders has resigned as instructor in economics at Texas Technological College. He will continue his graduate studies at Southern Methodist University.

Joseph F. Powers, formerly research assistant at South Dakota State College, has been appointed assistant professor of social studies at Mississippi State College for Women.

Bess J. Ramsey has retired from the Business Administration staff at Arkansas State Teachers College.

William T. Reece, formerly of Elon College, has been appointed associate professor of business administration in the College of William and Mary.

Douglas Lee Reed has been appointed assistant professor of economics at the University of Southwestern Louisiana.

Louella Richey, formerly of Florida State University, has been appointed visiting professor of accounting at the University of Miami for the 1960-61 academic year.

Charles Rockwood, a doctoral student at Indiana University, has been appointed assistant professor of economics at Florida State University.

John B. Rose has been promoted to professor and head of the Department of Accounting, University of Tennessee.

Robert P. Ross has been appointed instructor in economics at Middle Tennessee State College.

Francis Rosner has been appointed assistant professor in economics at Auburn University, effective September 1960.

William Roch has been appointed assistant professor of business administration in the Graduate School of Business Administration of the University of Virginia.

William Rotch has been appointed assistant professor of business administration at Texas A. and

M. College. He will engage in graduate study in business administration at the same institution.

Emmanuel N. Roussakis has been appointed instructor in economics and business administration at Fisk University.

Stephen W. Rousseas has been appointed associate professor of economics at the University of Maryland.

Gunther H. Ruff has been promoted to associate professor of economics at Georgetown University.

William A. Sandridge has been appointed associate professor of economics and head of the Department of Economics and Business Administration at Roanoke College.

Charles Frederick Sargent has been appointed assistant professor of business administration in the Graduate School of Business Administration of the University of Virginia.

George R. Satterlee has been appointed lecturer in mathematics in the College of Business Administration at Loyola University.

G. K. Saunders is now associate professor and chairman, Economics and Business Division, Missouri Valley College.

Howard G. Schaller has been appointed dean of the School of Business Administration at Tulane University, effective August 1, 1960.

Henry H. Schloss has returned to his position as assistant professor of economics at Washington University after having spent the 1959-60 academic year as a senior Fulbright research scholar in India.

William M. Schneider is professor of business administration and academic dean at Southern Missionary College.

Lydia G. Scully has been appointed instructor in business sciences at Loyola University.

Steven J. Shaw, associate professor of marketing at the School of Business Administration, University of South Carolina, was a guest professor at the summer session of the University of Washington.

Barbara A. Simpson has been promoted to assistant professor of economics at the College of William and Mary.

Henry Lybran Sisk, formerly a management consultant in Dallas, has been appointed professor of management at North Texas State College.

James A. Slater has resigned his position as associate professor of management and statistics at Louisiana Polytechnic Institute.

Walter L. Slifer, has resigned as professor of economics at Mercer University.

Kenneth S. Jones, formerly of the University of Houston, has been appointed instructor of economics at Mercer University.

G. Ralph Smith, associate professor of management at Loyola University, attended the Summer Seminar in New Developments in Business Ad-

ministration under Ford Foundation Sponsorship at Cornell University last August.

J. G. Smith, formerly of Ohio State University, has accepted a position as instructor in the Department of Economics, University of Florida.

Melvin W. Smith, who recently completed the Ph.D. degree at Ohio State University, has been appointed extension fruit and vegetable marketing specialist at Auburn University.

Robert Smith has been appointed associate professor of business at Ouachita College.

Josef Solterer, professor and chairman of the Department of Economics at Georgetown University, has returned from a sabbatical leave in Europe during the 1959-60 academic year.

Donald M. Soule, a 1959 appointee to the Bureau of Business Research, University of Kentucky, is now assistant professor of economics with part-time teaching duties.

Shirley D. Southworth has retired as professor of economics and chairman of the Department of Economics at the College of William and Mary.

Eldred Speck has resigned his position at McNeese State College. He is now teaching at Texas State College for Women.

Daniel L. Spencer has been appointed professor and head of the Department of Economics at Howard University.

William A. Sperry, formerly with the Houston Public Schools Distributive Education Program, has been appointed assistant professor of retailing at the University of Houston.

Jack S. Spratt has been named chairman of the Undergraduate Division of the Department of Economics at Southern Methodist University.

Darrell Spriggs, professor of economics, College of Business Administration, University of Arkansas, attended the University of Chicago Ford Foundation Seminar in New Developments in Business Administration held at Williams College last summer.

H. E. Steele represented Auburn University at the IBM Seminar in Business Administration at Endicott, New York, which was held from August 10 to August 19.

Joseph L. Steele, who has been working on the doctorate in economics at the University of Texas, has been appointed assistant professor of economics at Memphis State College.

M. D. Stigall has left his position as instructor and personnel counselor at Bemidji State College (Minn.) to become instructor of history and economics and chairman, Social Science Department, at The Kemper School (Mo.).

George W. Stocking, Vanderbilt University, has been assigned to the American University of Beirut, Lebanon, for the coming year under Vanderbilt University's Overseas Professorship Program.

W. E. Stone, formerly associate professor of accounting, University of Pennsylvania, has accepted a position as head of the Department of Accounting, University of Florida.

Donald F. Swanson, of the Economics Department, University of South Carolina, was granted the Ph.D. degree from the University of Florida in August 1960.

Basil O. Sweatt, associate professor of business administration at Southeastern Louisiana Institute, has been granted a year's leave of absence to continue his studies at Indiana University.

James W. Sweeney has been promoted to professor of industrial management at Tulane University.

Ralph R. Swoboda, instructor in business administration at Loyola University, has resigned to enter private business.

Anthony M. Tang, Vanderbilt University, has been promoted to associate professor of economics and business administration.

Lawrence Tarpey, formerly research and teaching assistant, Cornell University Graduate School of Business and Public Administration, is now assistant professor of economics, University of Kentucky.

Horace Taylor is distinguished guest professor of economics at Trinity University for the 1960-61 academic year.

R. J. Thacker has been appointed instructor in accounting at Louisiana State University.

Ermis A. Thompson, from the University of Alabama, has joined the Economics Department, Clemson College, as assistant professor.

Robert D. Thompson, formerly of Trinity University, has been appointed assistant professor of business administration at Texas A. and M. College.

William S. Thornton, who received the M.S. degree in Business Administration from Mississippi Southern College, has been appointed instructor in business administration at Mississippi College.

Philip Tibbs has been added to the staff in the Department of Business Administration, Murray State College.

Vlad Guy Tremblé has been appointed part-time instructor in economics in the School of Business Administration, University of North Carolina, effective September 1960.

Bruno Trevino has been appointed assistant professor of economics at the University of Southwestern Louisiana.

C. P. Tseng, visiting associate professor of economics at the School of Business Administration, Emory University, is now associate professor of economics at the same institution.

Shigeto Tsuru, of Hitotsubashi University, Tokyo, Japan, has been appointed visiting professor

of political economy at The Johns Hopkins University for the October 1960 term.

W. T. Tucker, associate professor of marketing administration, is acting chairman of the Department of Marketing Administration at the University of Texas for the 1960-61 academic year.

Jean L. Voyles has been promoted to associate professor of business education at Georgia State College of Business Administration.

Julius W. Waits, assistant professor of business and economics at Centenary College, spent the six weeks period June 6 to July 15 with the Illinois Central Railroad in Chicago on a Business-College Exchange Fellowship granted through the Foundation for Economic Education.

Paul E. Waller has rejoined the faculty of the Division of Commerce at Southern University after a one-year leave of absence to study at New York University.

Kornelis J. Walraven has resigned his post as economist at the Federal Reserve Bank of St. Louis to become industrial economist at the Industrial Research Extension Center of the University of Arkansas.

George Wang has been appointed chairman, Department of Business Administration, at Lane College.

Larkin B. Warner has been appointed assistant professor of economics at Oklahoma State University.

Stanislaw Wasowski was appointed assistant professor of economics at Georgetown University in the fall of 1959.

Frances Watson is teaching secretarial science at Southern State College.

Wallace Webb has been appointed part-time instructor in economics in the School of Business Administration, University of North Carolina, effective September 1960.

Irwin Weinstock is on leave from the University of Southwestern Louisiana to study at Louisiana State University.

Burton A. Weisbrod, assistant professor of economics at Washington University, will be on half-time leave of absence beginning the summer, 1961, to serve as co-principal investigator in a three-year study of spillover tax and benefit effects in public education.

George Welch, assistant professor of accounting, University of Miami, has been granted a leave of absence to pursue doctoral studies at the University of Indiana.

William H. Wells has been promoted to director of the Computing and Data Processing Center, Georgia State College of Business Administration.

William H. Wesson, Jr., formerly of Louisiana State University, was appointed professor of eco-

nomics at the University of South Carolina, effective September 1960.

David A. West, formerly of Union University, Jackson, Tennessee, has been appointed associate professor of economics at Carson-Newman College.

Rhea H. West, Jr. has been appointed associate professor of economics at Carson-Newman College.

Harvey J. Wheeler has joined the Economics Department, Clemson College, as assistant professor.

Arthur M. Whitehill, Jr., professor of human relations in industry at the University of North Carolina, is teaching part time at Duke University for the year 1960-61.

Clinton H. Whitehurst, Jr., from Florida State University, has joined the Industrial Management Department, Clemson College, as assistant professor.

David A. Whitney has been appointed instructor in management and marketing at Louisiana State University in New Orleans.

William C. Whitten, associate professor of economics at Clemson College, is on leave working toward the Ph.D. degree at the University of Alabama.

Jack H. Wilcox, associate professor of business administration, the University of Tennessee, is on extended leave of absence pursuing independent research.

George Wilkinson, a graduate of the University of Arkansas, has been appointed instructor of business administration and economics at the College of the Ozarks.

Franklin Williams, professor of marketing, College of Business Administration, University of Arkansas, participated in the Carnegie Tech Ford Foundation Seminar in New Developments in Business Administration held at Cornell University last summer.

Gustavus G. Williamson, Jr. has rejoined the Department of Economics, University of South Carolina, after a two-year leave of absence. He has been promoted to associate professor.

Sam M. Willis, assistant professor in the Industrial Management Department, Clemson College, has returned from a years' leave during which he studied for the Ph.D. degree at the University of Alabama.

Edward Lowry Winn, Jr., formerly of Indiana University, is now assistant professor of finance at the School of Business Administration, University of South Carolina.

John Wittman has been appointed assistant professor of economics at Texas Technological College.

Carl N. Woods has been appointed instructor in economics, Morehead State College (Ky.).

Leslie C. Wright, John Hay Whitney visiting professor, second semester of 1959-60 at the College of William and Mary, has returned to the University of Edinburgh.

Hellon Wykle, assistant professor of business at Mississippi State College for Women, has been granted a year's leave of absence to do further graduate study.

Cyril A. Zebot, professor of economics at Georgetown University, served as acting chairman of the Department of Economics during the 1959-60 academic year.

Lazlo Zsoldos, instructor in economics, 1957-60, Ohio State University, is now assistant professor of economics, University of Kentucky.

NEW MEMBERS

The following names have been added to the membership of the Southern Economic Association:

Clinton A. Baker, University of South Carolina, Columbia, S. C.

Charles P. Blicht, University of North Carolina, Chapel Hill, N. C.

Vivian G. Conklin, 2068 Ben Hill Road, East Point, Ga.

Norton T. Dodge, University of Maryland, College Park, Md.

Richard M. Duvall, Duke University, Durham, N. C.

M. Dale Henson, Georgia Institute of Technology, Atlanta, Ga.

James G. Hilton, University of South Carolina, Columbia, S. C.

Max T. Johns, University of Georgia, Athens, Ga.

Richard A. LaBarge, Ford Motor Company, Dearborn, Mich.

Eugene W. Lambert, Jr., P. O. Box 2431, University, Ala.

Robert A. Lynn, Maryville College, Maryville, Tenn.

Richard W. Massey, Jr., 54 Cherokee Road, Birmingham 13, Ala.

Richard Eugene Neel, College of William and Mary, Williamsburg, Va.

Cora Louise Nelson, P. O. Box 871, Chapel Hill, N. C.

Richard W. Poole, Oklahoma State University, Stillwater, Okla.

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